Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project

Quarterly Report for the Period

July 1, 2007 through September 30, 2007

Submitted to

Judge Janis Graham Jack
US District Court for the Southern District of Texas
Corpus Christi, Texas

Ms. Kathleen Aisling
US Environmental Protection Agency, Region 6
Dallas, Texas

Ms. Susan Clewis
Texas Commission on Environmental Quality, Region 14
Corpus Christi, Texas

Submitted by

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November 28, 2007

I. Introduction

On October 1, 2003, the US District Court for the Southern District of Texas issued an order to the Clerk of the Court to distribute funds in the amount of $6,700,000, plus interest accrued, to The University of Texas at Austin (UT Austin) to implement the court ordered condition of probation (COCP) project *Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation* (Project). This quarterly report has been prepared pursuant to the requirements of the project and is being submitted to the US District Court, the US Environmental Protection Agency (EPA), and the Texas Commission on Environmental Quality (TCEQ).

II. Project Progress Report

The focus of work during the quarter ending September 30, 2007 has been directed to the following activities.

A. Operations and Maintenance Phase of the Project

A detailed description of some data analyses appear in Appendix A, pages, 6 through 37, and a summary of these analyses appear in this section.

The Project consists of a network of seven (7) air monitoring stations with air monitoring instruments and surveillance camera equipment. A map showing locations of COCP Project monitoring sites along with TCEQ sites and sites operated by Texas A&M at Kingsville (TAMUK) appears in Figure 1, below. Table 1, found on page 3, identifies the location and instrumentation found at each of the COCP Project sites. TCEQ and TAMUK sites provide some additional data used in analyses.

Figure 1. Corpus Christi Monitoring Sites

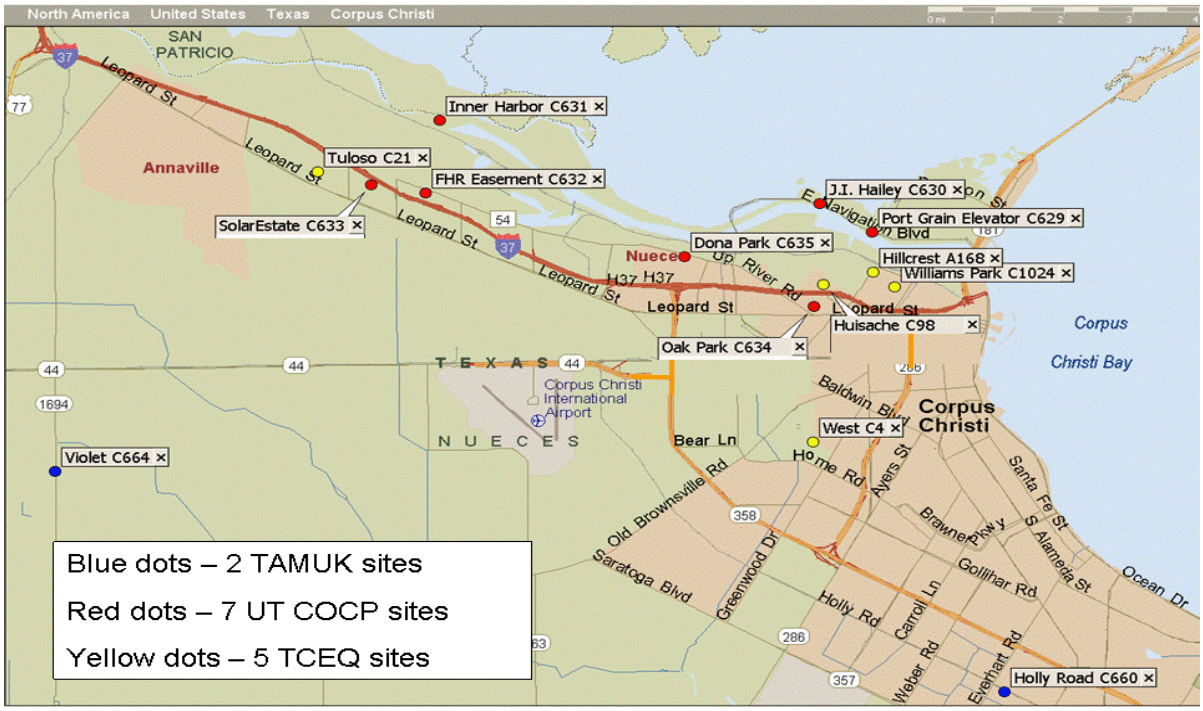

Table 1. Schedule of Air Monitoring Sites, Locations and Major Instrumentation

TCEQ CAMS Nos.	Description of Site Location	Monitoring Equipment				
		Auto GC	TNMHC(T) & Canister(C)	H2S & SO2	Met Station	Camera
634	Oak Park Recreation Center	Yes	T		Yes	
629	Grain Elevator @ Port of Corpus Christi		T&C	Yes	Yes	
630	J. I. Hailey Site @ Port of Corpus Christi		T&C	Yes	Yes	
635	TCEQ Monitoring Site C199 @ Dona Park		T&C	Yes	Yes	Yes
631	Port of Corpus Christi on West End of CC Inner Harbor		T&C	Yes	Yes	
632	Off Up River Road on Flint Hills Resources Easement		T&C	Yes	Yes	
633	Solar Estates Park at end of Sunshine Road	Yes	T	Yes	Yes	Yes

Legend

Auto GC	automated gas chromatograph
TNMHC	total non-methane hydrocarbon analyzer (all except 634 & 633 also have canister hydrocarbon samplers)
H_2S	hydrogen sulfide analyzer
SO_2	sulfur dioxide analyzer
Met Station	meteorology station consisting of measurement instruments for wind speed, wind direction, ambient air temperature and relative humidity
Camera	surveillance camera

During the third quarter of 2007, a one notable pollution event was monitored and a discussion appears in Appendix A, page 32. Specifically, the appendix contains the following elements:

B. **Canister Sampling and Analysis -** During the third quarter of 2007, 13 valid canister samples were triggered. Three samples had 20-min. average benzene concentrations higher than the TCEQ's short-term Effects Screening Level (ESL) of 25 ppbV. More details about canister sampling appear in Appendix A, pages 11 through 26.

C. **Auto-GC Effects Screening Level Summary -** In examining the third quarter's hourly auto-GC data from Oak Park and Solar Estates, only one measurement (benzene at Oak Park) was found to have exceeded an hourly effects screening level, or ESL. Also, the quarterly averages of all species were below the respective annual ESLs, as are the rolling average over the past four quarters. A summary appears in Appendix A, pages 26 through 37.

D. **Analysis of an H_2S/TNMHC Event at JIH** – As was reported in the last quarterly report, on May 3, 2007, readings of H_2S and TNMHC were measured at the JIH C630

site that triggered automated alerts. Over the course of that day SO_2 concentrations were unexpectedly high. A similar event occurred on July 27 when the highest H_2S measurements (500+ ppb[1]) within the network to date were recorded. The TCEQ investigated an associated ship loading event upwind of the site. The event is discussed further in Appendix A, page 32.

D. Scheduled Meetings of the Volunteer Advisory Board

The Corpus Christi Project Advisory Board did not meet during this quarter.

E. Project Management and Planning

Project Management and Planning during this period has focused on the following four (4) major activities.

1. **Project Schedule**
   Operations and maintenance of the seven monitoring sites reporting data via the TCEQ LEADS System is on-going. The data can be accessed and reviewed at the project website (http://www.utexas.edu/research/ceer/ccaqp/).

2. **Communication and Reporting**
   The status of the Project has been communicated through the website, which is operational with portions under continual development, quarterly and annual reports, and at meetings of the Advisory Board.

3. **Budget Monitoring**
   Budget monitoring during the period has focused on project costs for Phase II - Sites Operation and Maintenance costs. Financial reports for the quarter are included at Appendix B, page 39.

4. **Other Contributions**
   There were no other contributions awarded during this reporting period.

III. Financial Report

As required, the following financial summary information is provided. Details supporting this financial summary are included in Appendix B, page 39.

A. Total Amount of COCP Funds and Other Funds Received Under the Project

The COCP funds received through September 30, 2007 totals $7,294,856.95. This total includes interest earned through September 30, 2007.

B. Detailed List of the Actual Expenditures Paid from COCP Funds

Expenditures of COCP funds during this quarter totaled $195,938.32. The detailed breakdown of the actual expenditures is included in Appendix B, page 39. The activities for which these expenditures were used are detailed in Section II, beginning on page 2 of this report.

[1] The full scale range for the hydrogen sulfide analyzer is 500 ppb, and values above this level are cropped. Successive values cropped at 500 ppb over a 14 hour period indicate that actual concentrations exceeded this level.

C. Total Interest Earned on COCP Funds During the Quarter

The interest earned during this quarter totaled $34,386.56. A report providing detailed calculations of the interest earned on the COCP funds during each month of the quarter is included in Appendix B, page 39.

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D. Balance as of September 30, 2007, in the COCP Account

The balance in the COCP account, including interest earned totals $4,189,622.55.

E. Expected Expenditures for the Funds Remaining in the COCP Account

The expected expenditures for the funds remaining totals $4,189,622.55.

Quarterly Report Distribution List:

U.S. District Court
- Ms. Shirley Johnson, Assistant Deputy Chief USPO
- Mr. James Martinez, Supervising USPO

Texas Commission on Environmental Quality
- Ms. Sharon Blue, Litigation Division – Headquarters
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- Ms. Susan Clewis, Director – Region 14
- Mr. David Turner, Air Monitoring Section – Region 14
- Mr. David Kennebeck, Field Operations – Region 14

Environmental Protection Agency
- Ms. Kathleen Aisling, Environmental Engineer, Air Enforcement Section, Dallas Regional Office

Members of the Advisory Board

APPENDIX A

Data Analysis for Corpus Christi Quarterly Report

July 1, 2007 through September 30, 2007

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Data Analysis for Corpus Christi Quarterly Report

This technical report describes recent results of monitoring and analysis of data under the Corpus Christi Air Quality Project over the period from July 1 through September 30, 2007. The monitoring network is shown in Figure 1, page 8, and is described in Table 1 below. This report contains the following elements:

- an update on canister sampling and analysis of results;
- a summary of hourly speciated hydrocarbon concentrations measured by automated gas chromatographs (auto-GCs) compared with health effects screening levels;
- a case study of a hydrocarbon and hydrogen sulfide (H_2S) event on July 27-28, 2007.

Table 1. Schedule of Air Monitoring Sites, Locations and Major Instrumentation

TCEQ CAMS#	Description of Site Location	Monitoring Equipment				
		Auto GC	TNMHC (T) / Canister (C)	H_2S & SO_2	Met Station	Camera
634	Oak Park Recreation Center (**OAK**)	Yes	T		Yes	
629	Grain Elevator @ Port of Corpus Christi (**CCG**)		T&C	Yes	Yes	
630	J. I. Hailey Site @ Port of Corpus Christi (**JIH**)		T&C	Yes	Yes	
635	TCEQ Monitoring Site C199 @ Dona Park (**DPK**)		T&C	Yes	Yes	Yes
631	Port of Corpus Christi on West End of CC Inner Harbor (**WEH**)		T&C	Yes	Yes	
632	Off Up River Road on Flint Hills Resources Easement (**FHR**)		T&C	Yes	Yes	
633	Solar Estates Park at end of Sunshine Road (**SOE**)	Yes	T	Yes	Yes	Yes

Legend

Auto GC	automated gas chromatograph
TNMHC	total non-methane hydrocarbon analyzer (all except 634 & 633 also have canister hydrocarbon samplers)
H_2S	hydrogen sulfide analyzer
SO_2	sulfur dioxide analyzer
Met Station	meteorology station consisting of measurement instruments for wind speed, wind direction, ambient air temperature and relative humidity
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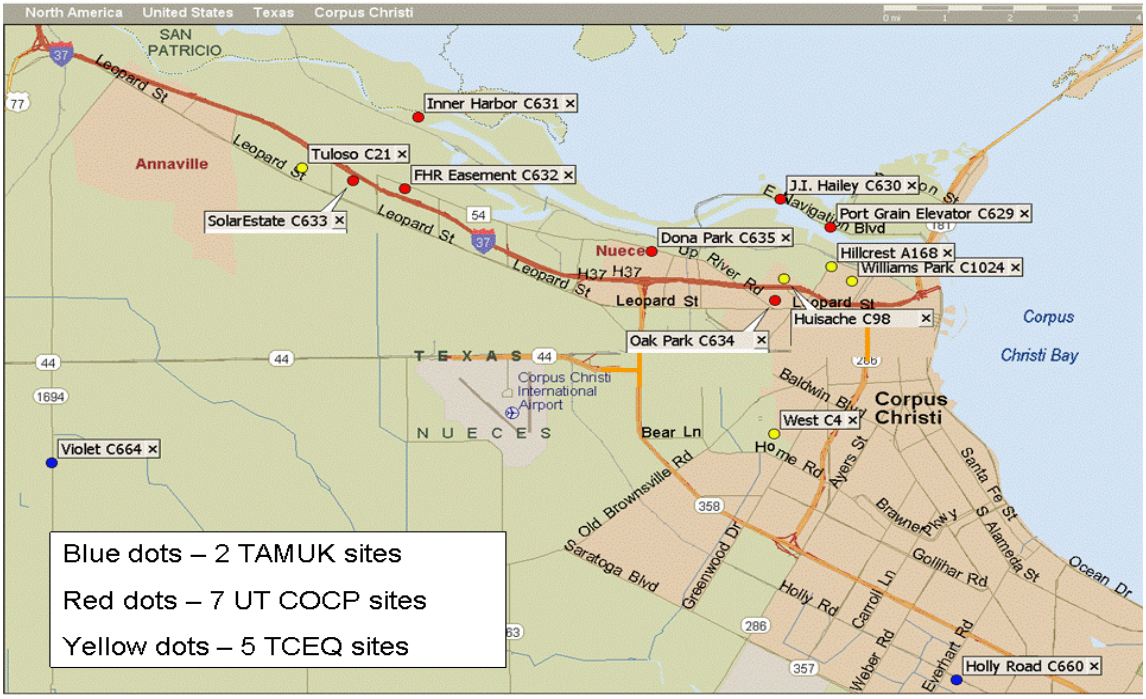
Figure 1. Corpus Christi Monitoring Sites



Glossary

Glossary of terms

- **Pollutant concentrations** – Concentrations of most gaseous pollutants are expressed in units denoting their "mixing ratio" in air; i.e., the ratio of the number molecules of the pollutant to the total number of molecules per unit volume of air. Because concentrations for all gases other than molecular oxygen, nitrogen, and argon are very low, the mixing ratios are usually scaled to express a concentration in terms of "parts per million" (ppm) or "parts per billion" (ppb). Sometimes the units are explicitly expressed as ppm-volume (ppmV) or ppb-volume (ppbV) where 1 ppmV indicates that one molecule in one million molecules of ambient air is the compound of interest and 1 ppbV indicates that one molecule in one billion molecules of ambient air is the compound of interest. In general, air pollution standards and health effects screening levels are expressed in ppmV or ppbV units. Because hydrocarbon species may have a chemical reactivity related to the number of carbon atoms in the molecule, mixing ratios for these species are often expressed in ppb-carbon (ppbV times the number of carbon atoms in the molecule), to reflect the ratio of carbon atoms in that species to the total number of molecules in the volume. This is relevant to our measurement of auto-GC species and TNMHC, which are reported in ppbC units. For the purpose of relating hydrocarbons to health effects, this report notes hydrocarbon concentrations in converted ppbV units. However, because TNMHC is a composite of all species with different numbers of carbons, it cannot be converted to ppbV. Pollutant concentration measurements are time-stamped based on the start time of the sample, in Central Standard Time (CST), with sample duration noted.
- **Auto-GC** - The automated gas chromatograph collects a sample for 40 minutes, and then automatically analyzes it for some 47 hydrocarbon species. These include benzene and

1,3-butadiene, which are air toxics, various butene species that have relatively low odor thresholds, and a range of gasoline and vehicle exhaust components. Auto-GCs operate at Solar Estates CAMS 633 and Oak Park CAMS 634.

- **Total non-methane hydrocarbons** (TNMHC) – TNMHC represent a large fraction of the total volatile organic compounds released into the air by human and natural processes. TNMHC is an unspeciated total of all hydrocarbons, and individual species must be resolved by other means, such as with canisters or auto-GCs. However, the time resolution of the TNMHC instrument is much shorter than the auto-GC, and results are available much faster than with canisters. TNMHC analyzers operate at all seven UT/CEER sites.

- **Canister** – Stainless steel canisters are filled with air samples when an independent sensor detects that elevated (see below) levels of hydrocarbons (TNMHC) are present. Samples are taken for various lengths of time (generally 20 minutes) to try to capture the chemical make-up of the air. In most cases, the first time on any day that the monitored TNMHC concentration exceeds 2000 ppbC at a site for a continuous period of 15 minutes or more, the system will trigger and a sample will be collected. Samples are sent to UT Austin and are analyzed in a lab to resolve some 50 – 55 hydrocarbon species. Canister samplers have operated at all seven UT/CEER sites, but this quarter only at five (CAMS 629,630,631,632, and 635).

- **Effects Screening Levels (ESLs) –** From the TCEQ Web site: **"**Effects Screening Levels are used to evaluate the potential for effects to occur as a result of exposure to concentrations of constituents in the air. ESLs are based on data concerning health effects, the potential for odors to be a nuisance, effects on vegetation, and corrosive effects. They are not ambient air standards. If predicted or measured airborne levels of a constituent do not exceed the screening level, adverse health or welfare effects are not expected. **If ambient levels of constituents in air exceed the screening levels, it does not necessarily indicate a problem but rather triggers a review in more depth**." (Emphasis added.) (Accessed October, 2007) http://www.tceq.state.tx.us/implementation/tox/esl/ESLMain.html

- **Elevated Concentrations –** In the event that measured pollutant concentrations are above a set threshold they are referred to as "elevated concentrations." The values for these thresholds are summarized by pollutant below. As a precursor to reviewing the data, the reader should understand the term "*statistical significance*". In the event that a concentration is higher than one would typically measure over, say, the course of a week, then one might conclude that a specific transient assignable cause may have been the pollution source, because experience shows the probability of such a measurement occurring under normal operating conditions is small. Such an event may be labeled "statistically significant" at level 0.01, meaning the observed event is rare enough that it is not expected to happen more often than once in 100 trials. This does not necessarily imply the occurrence of a violation of a health-based standard. A discussion of "elevated concentrations" and "statistical significance by pollutant type follows:

    - For H_2S or SO_2, any measured concentration greater than the level of the state residential standards, which are 80 ppb for H_2S and 400 ppb for SO_2, is considered "elevated." Note that the concentrations need not persist long enough to constitute an exceedance of the standard to be so regarded. In addition, any

closely spaced values that are statistically significantly (at 0.01 level) greater than the long-run average concentration for a period of one hour or more will be considered “elevated” because of their unusual appearance, as opposed to possible health consequence. The rationale for doing so is that unusually high concentrations at a monitor may suggest the existence of unmonitored concentrations closer to the source area that are potentially above the state’s standards.

- For TNMHC, any measured concentration greater then the canister triggering threshold of 2000 ppbC is considered “elevated.” Note that the concentrations need not persist long enough to trigger a canister (900 seconds).
- For benzene and other air toxics in canister samples or auto-GC measurements, any concentration above the short-term ESL is considered “elevated.” Note that 20-minute canister samples and 40-minute auto-GC measurements are both compared with the one-hour ESL.
- Some hydrocarbon species measured in canister samples or by the auto-GC generally appear in the air in very low concentrations close to the method detection level. Similar to the case above with H_2S and SO_2, any values that are statistically significantly (at 0.01 level) greater than the long-run average concentration will be considered “elevated” because of their unusual appearance, as opposed to possible health consequence. The rationale for doing so is that unusually high concentrations at a monitor may suggest an unusual emission event in the area upwind of the monitoring site.

1. Canister Sampling and Analysis of Results

Summaries of the 13 twenty-minute canister samples from the most recent quarter are shown in Table 2 below. Cans were triggered at only three of the five active canister sites. The concentrations for the sum of identified species in the canister are shown in the "Sum Pol ppbC" row. The benzene concentration in the canister is shown in parts per billion volume units for comparison to the short term effects screening level of 25 ppbV. Three samples had concentrations above this level. Note that times shown in Table 2, below, are in Central Standard Time and represent the start time for a 20-minute sample taken following a 15 minutes period of sustained elevated hydrocarbon measurements (above 2000 ppbC).

Table 2. Canister Samples, 3Q07

Sitename	Date-time CST	Benzene ppbV	SumPol ppbC
CCG CAMS 629	7/7/07 23:34	**28.86**	10430.31
CCG CAMS 629	7/30/07 3:22	4.25	2653.42
CCG CAMS 629	8/14/07 0:40	4.18	1757.16
CCG CAMS 629	9/18/07 3:25	16.21	1209.84
JIH CAMS 630	7/16/07 6:57	3.83	2253.86
JIH CAMS 630	7/27/07 19:44	3.08	5683.96
JIH CAMS 630	8/31/07 19:48	4.43	1663.21
WEH CAMS 631	7/13/07 16:17	3.93	2935.29
WEH CAMS 631	7/28/07 5:29	5.19	5698.00
WEH CAMS 631	8/2/07 6:50	4.09	3412.73
WEH CAMS 631	8/13/07 21:19	3.67	3446.26
WEH CAMS 631	9/8/07 23:37	**30.52**	3951.91
WEH CAMS 631	9/19/07 0:34	**54.23**	7068.35

All six canisters sampled at West End harbor (WEH) were associated with southeast winds and back-trajectories similar to that in Figure 2 (following page) for August 2. The accompanying Figure 3, page 12, shows a close up aerial of the area to the southeast of the site featuring ship loading.

In Figures 4 – 16, pages 13 – 25, appear the chemical speciation results of the 13 canister samples with the 30-mimute surface back-trajectory started near the time each canister was triggered. The speciation results are shown graphically, and are provided only to show qualitatively the nature of the similarities and differences between samples. The labeling on the x-axis indicating which species is represented by the bar above it and the labeling on the y-axis representing the concentrations. The species are ordered in the graphs with the lighter species (e.g., ethane, ethylene, having two carbons per molecule) to the left, with heavier species (e.g., trimethylbenzenes, nonane, having nine carbons per molecule) to the right. The actual graphs can be provided in large scale with clearer labeling upon request.

Some general observations about the data follow Figures 4 – 16, pages 13 – 25.

Figure 2. 30-minute surface back-trajectory from WEH, 8/2/07 6:50 CST

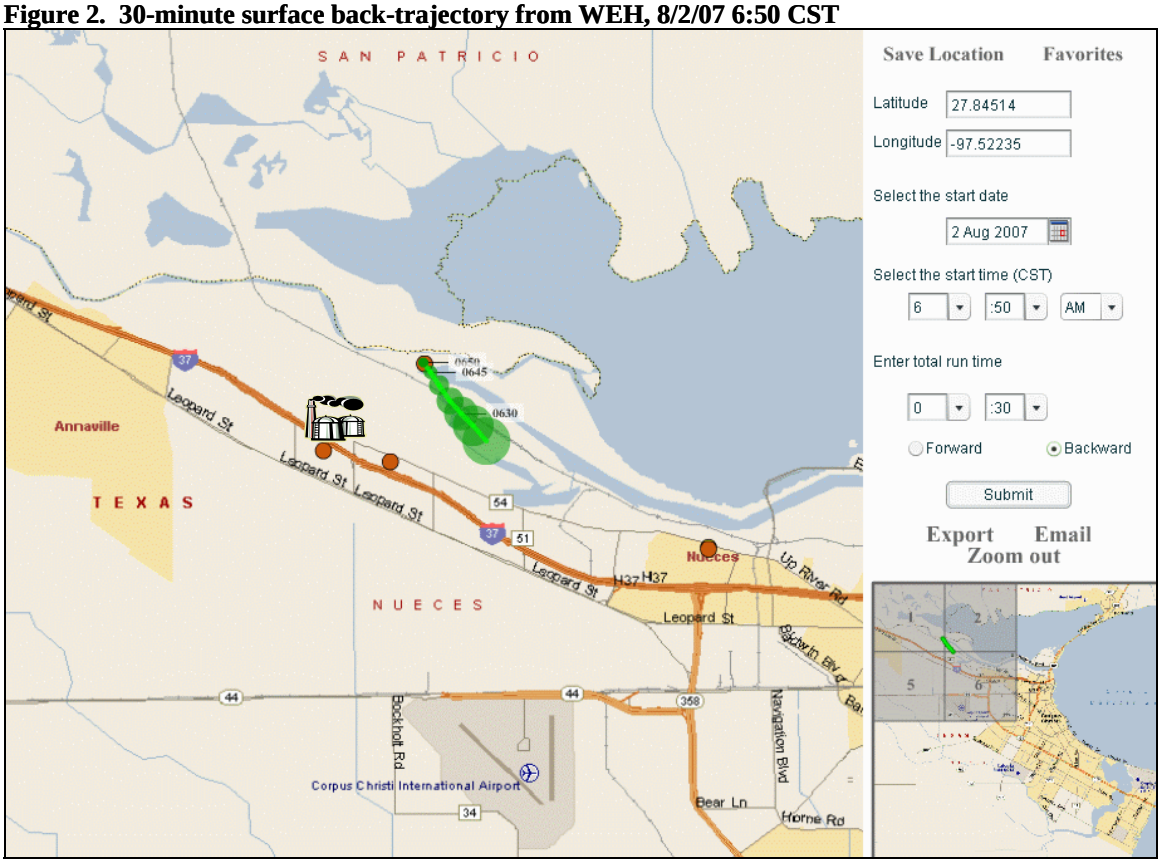
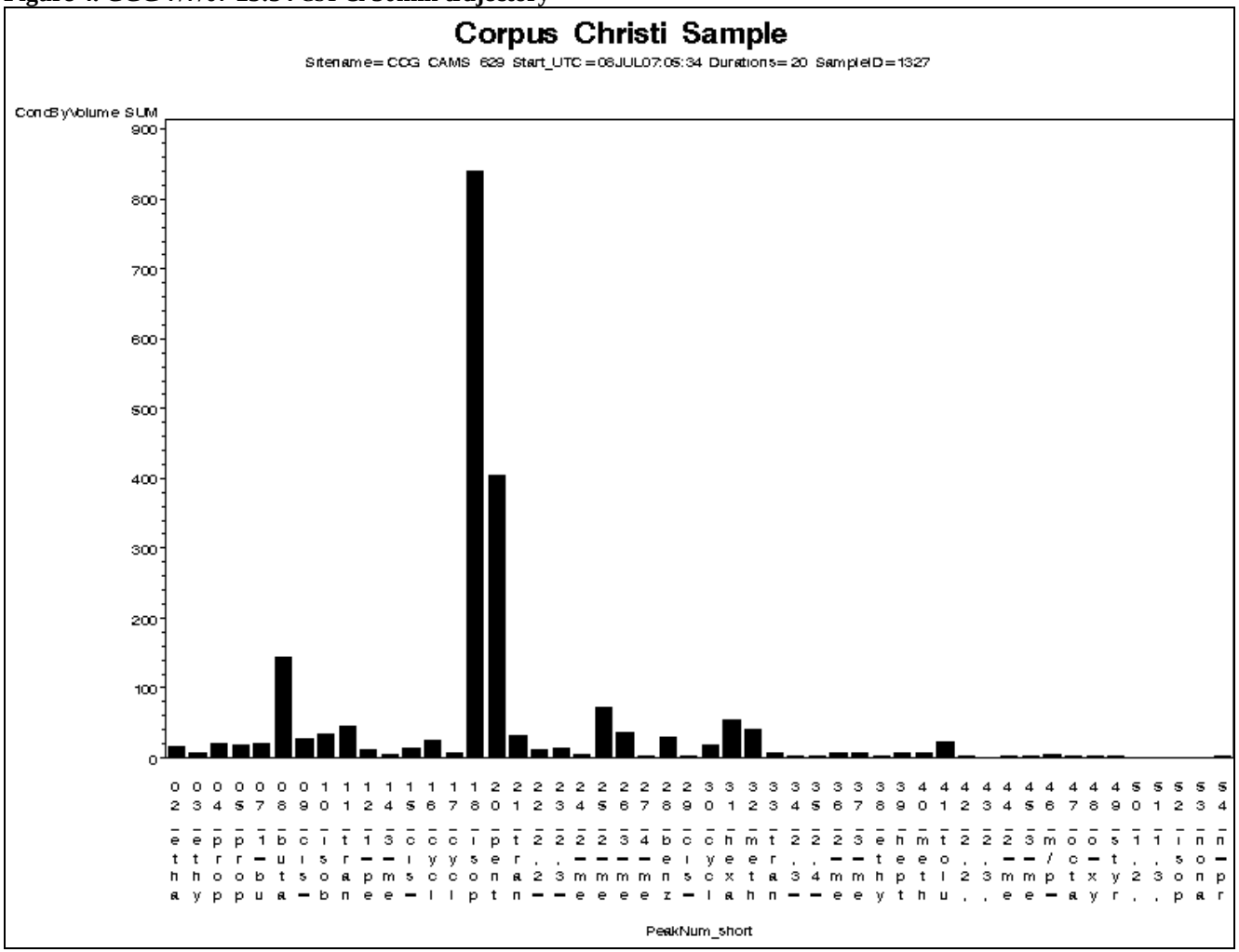


Figure 3. Aerial photo WEH site

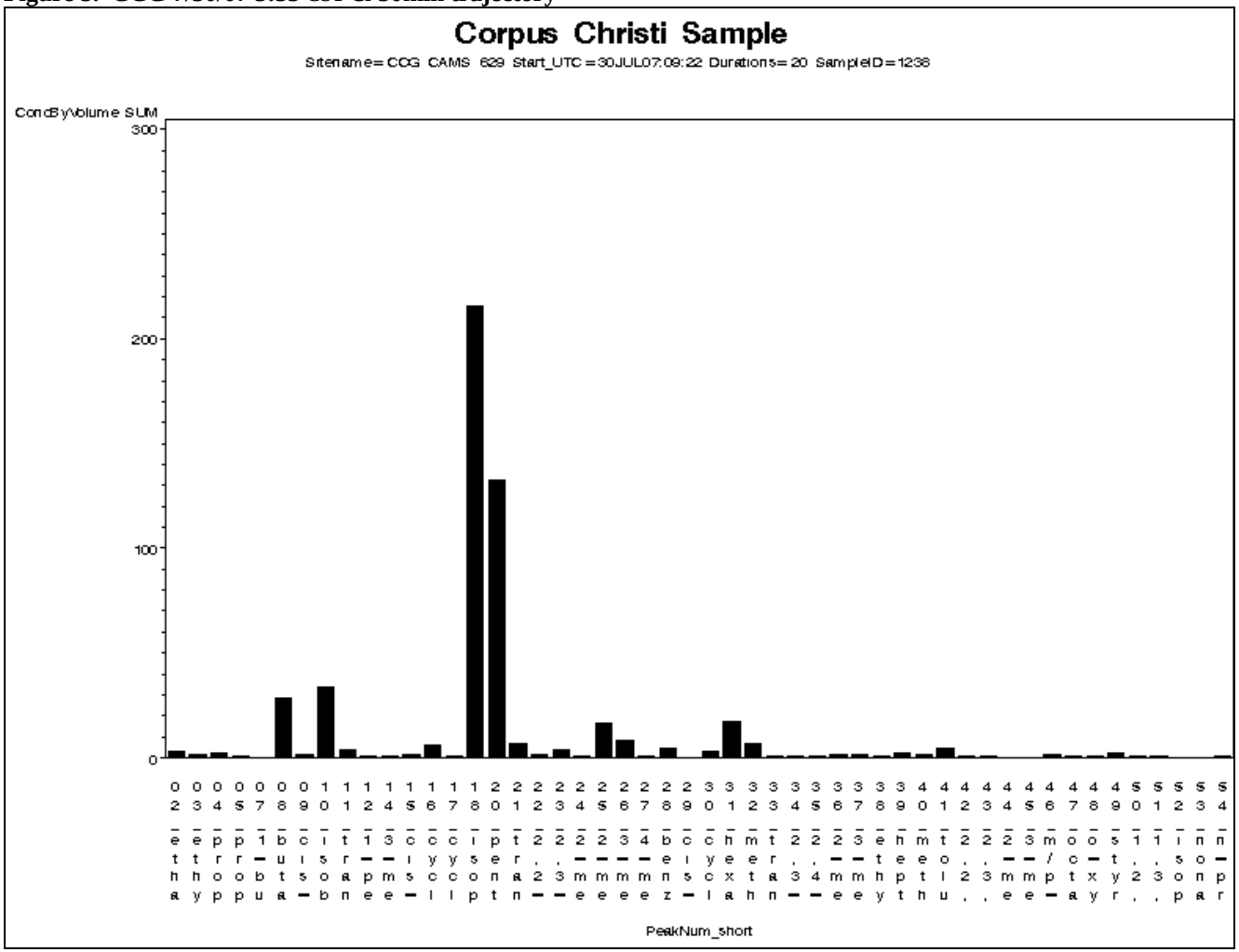
Figure 4. CCG 7/7/07 23:34 CST & 30min trajectory



Species

02) ethane 03) ethylene 04) propane
05) propylene 07) 1-butene 08) butane
09) cis-2-butene 10) isobutane 11) trans-2-butene
12) 1-pentene 14) 3-methyl-1-butene
15) cis-2-pentene 16) cyclopentane
17) cyclopentene 18) isopentane 20) pentane
21) trans-2-pentene 22) 2,2-dimethylbutane
23) 2,3-dimethylbutane 24) 2-methyl-1-pentene
25) 2-methylpentane 26) 3-methylpentane
27) 4-methyl-1-pentene 28) benzene
29) cis-2-hexene 30) cyclohexane 31) hexane
32) methylcyclopentane 33) trans-2-hexene
34) 2,3-dimethylpentane 35) 2,4-dimethylpentane
36) 2-methylhexane 37) 3-methylhexane
38) ethylbenzene 39) heptane
40) methylcyclohexane 41) toluene
42) 2,2,4-trimethylpentane 43) 2,3,4-trimethylpentane
44) 2-methylheptane 45) 3-methylheptane
46) m/p-xylene 47) octane 48) o-xylene
49) styrene 50) 1,2,4-trimethylbenzene
51) 1,3,5-trimethybenzene 52) isopropylbenzene
53) nonane 54) n-propylbenzene

Figure 5. CCG 7/30/07 3:33 CST & 30min trajectory



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49) styrene 50) 1,2,4-trimethylbenzene
51) 1,3,5-trimethybenzene 52) isopropylbenzene
53) nonane 54) n-propylbenzene

Figure 6. CCG 8/14/07 00:41 CST & 30min trajectory

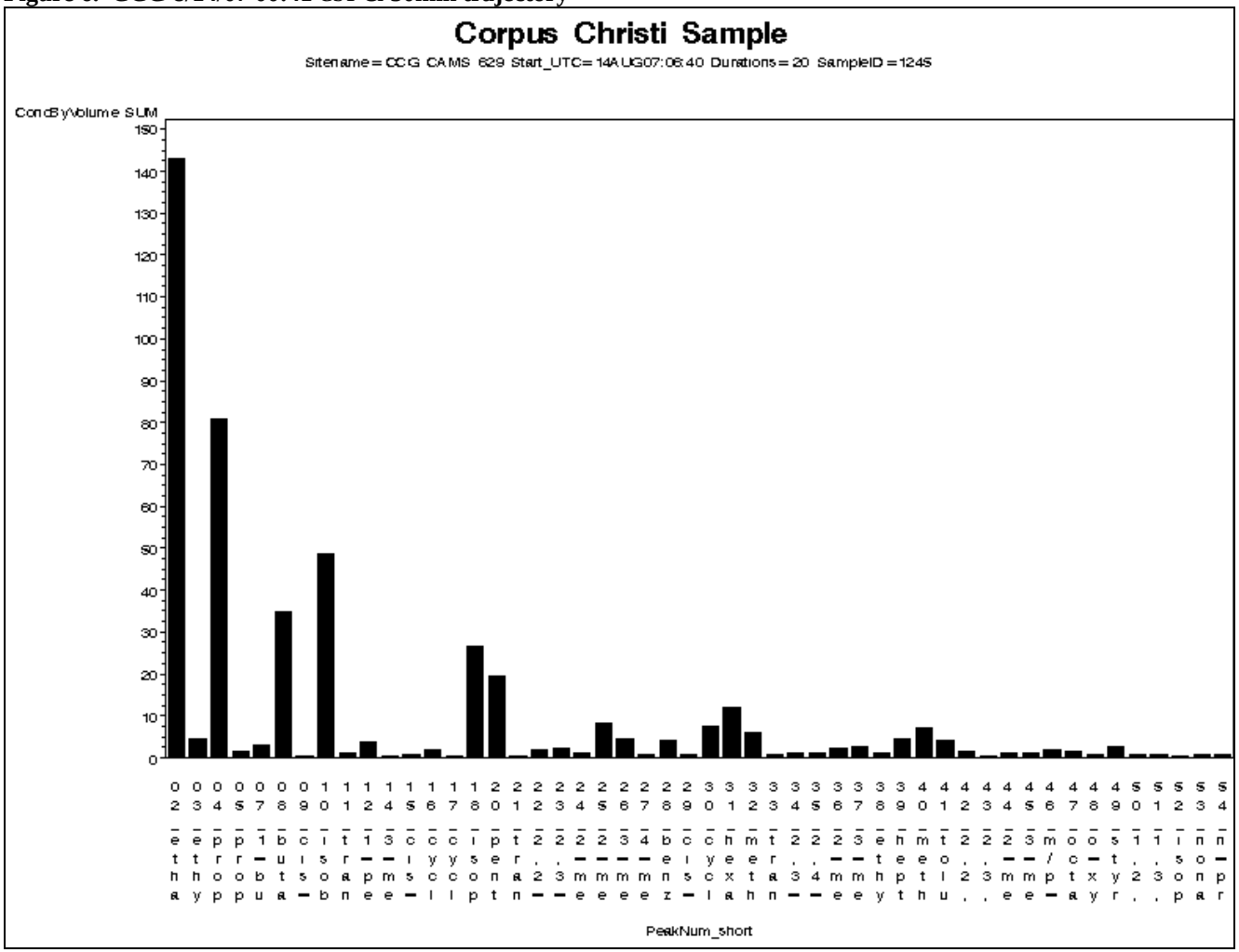

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Figure 7. CCG 9/18/07 3:25 CST & 30min trajectory

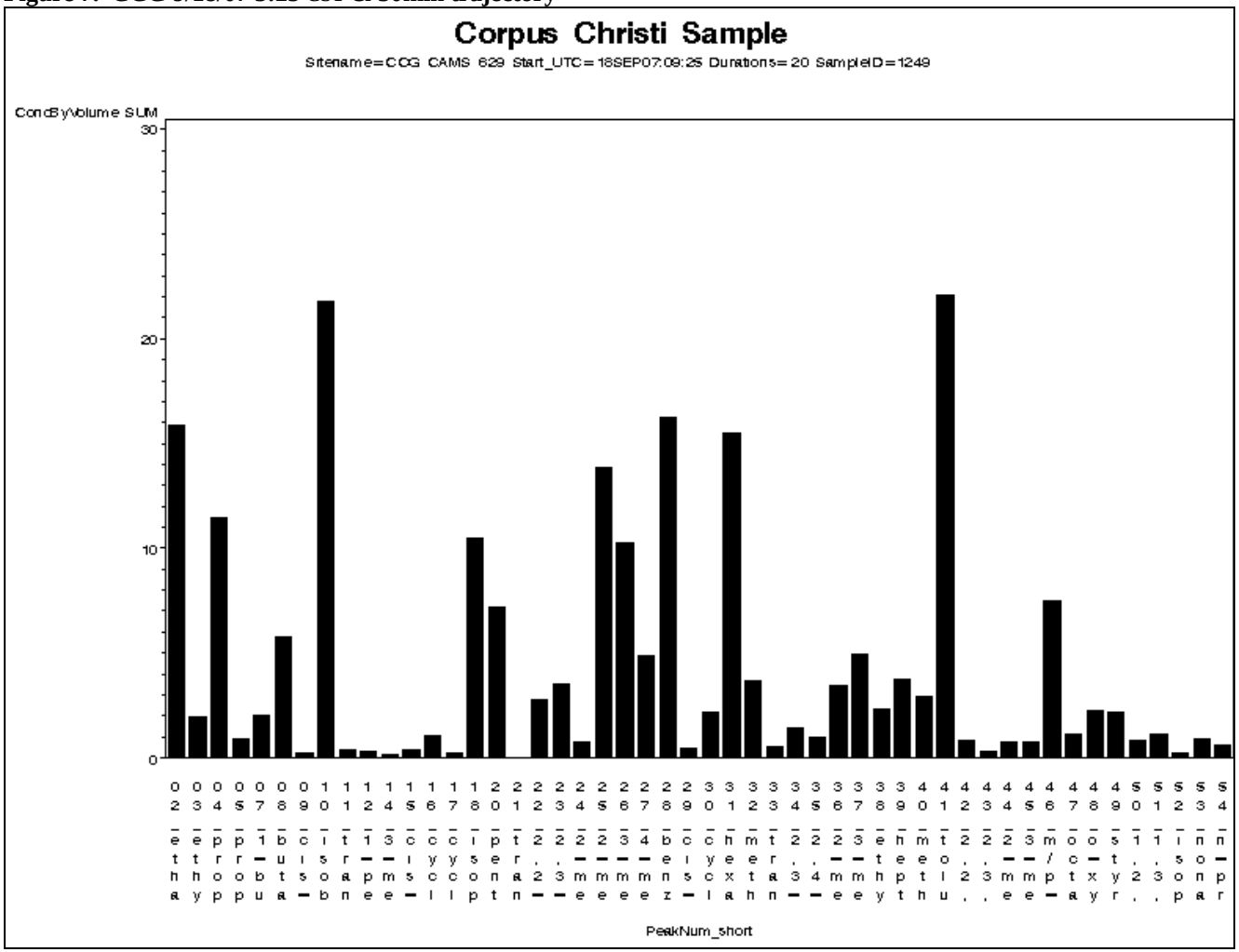

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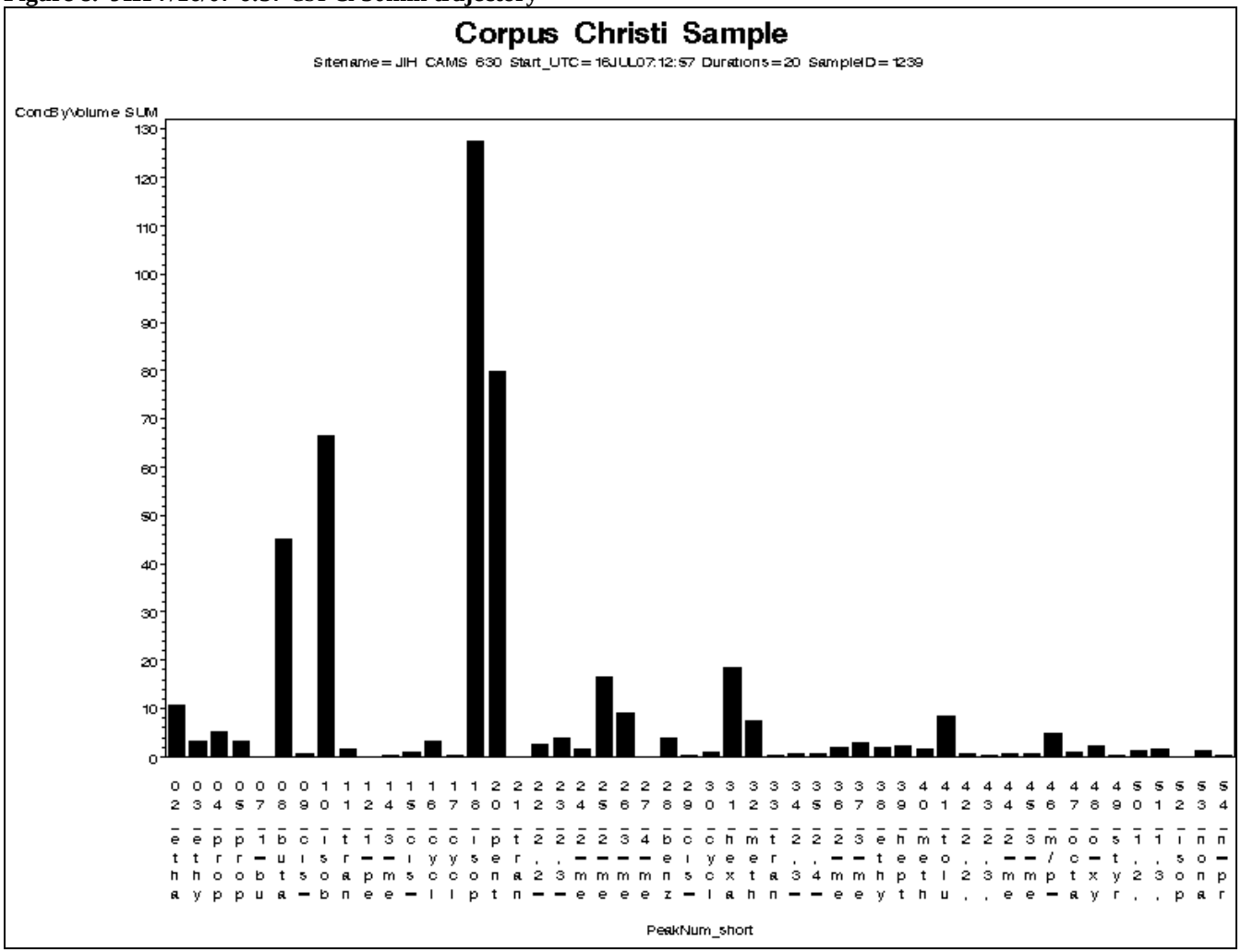
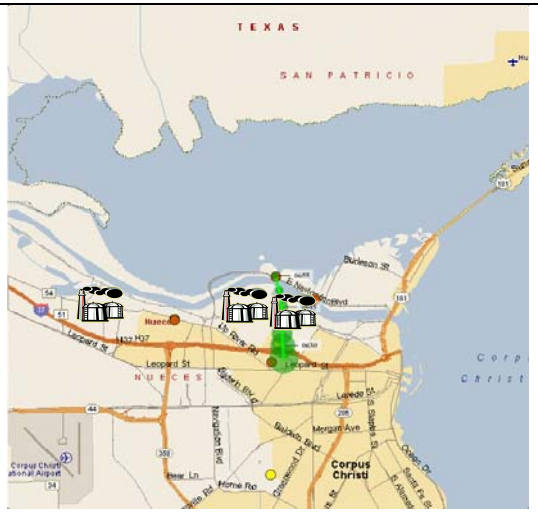
Figure 8. JIH 7/16/07 6:57 CST & 30min trajectory





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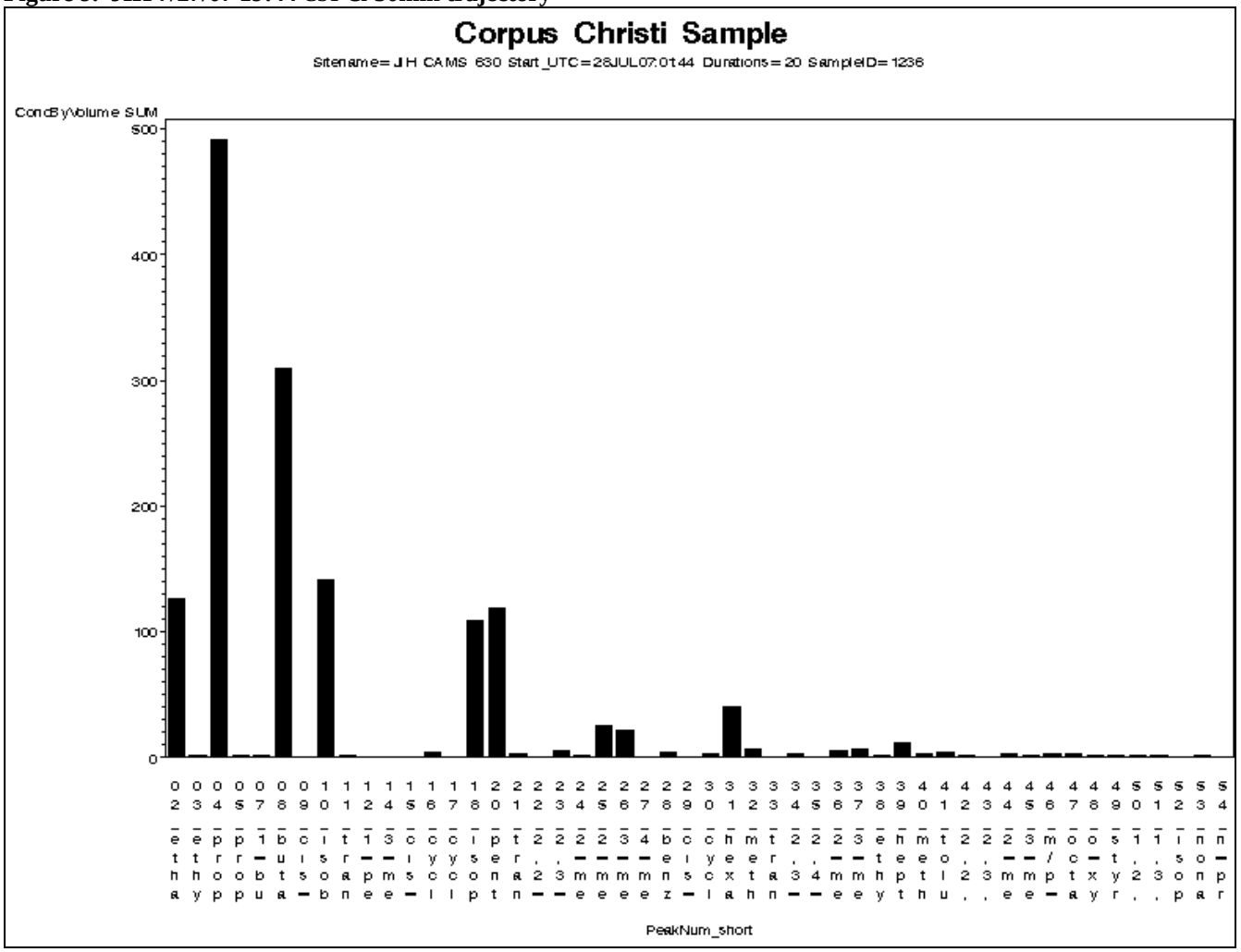
44) 2-methylheptane 45) 3-methylheptane
46) m/p-xylene 47) octane 48) o-xylene
49) styrene 50) 1,2,4-trimethylbenzene
51) 1,3,5-trimethybenzene 52) isopropylbenzene
53) nonane 54) n-propylbenzene

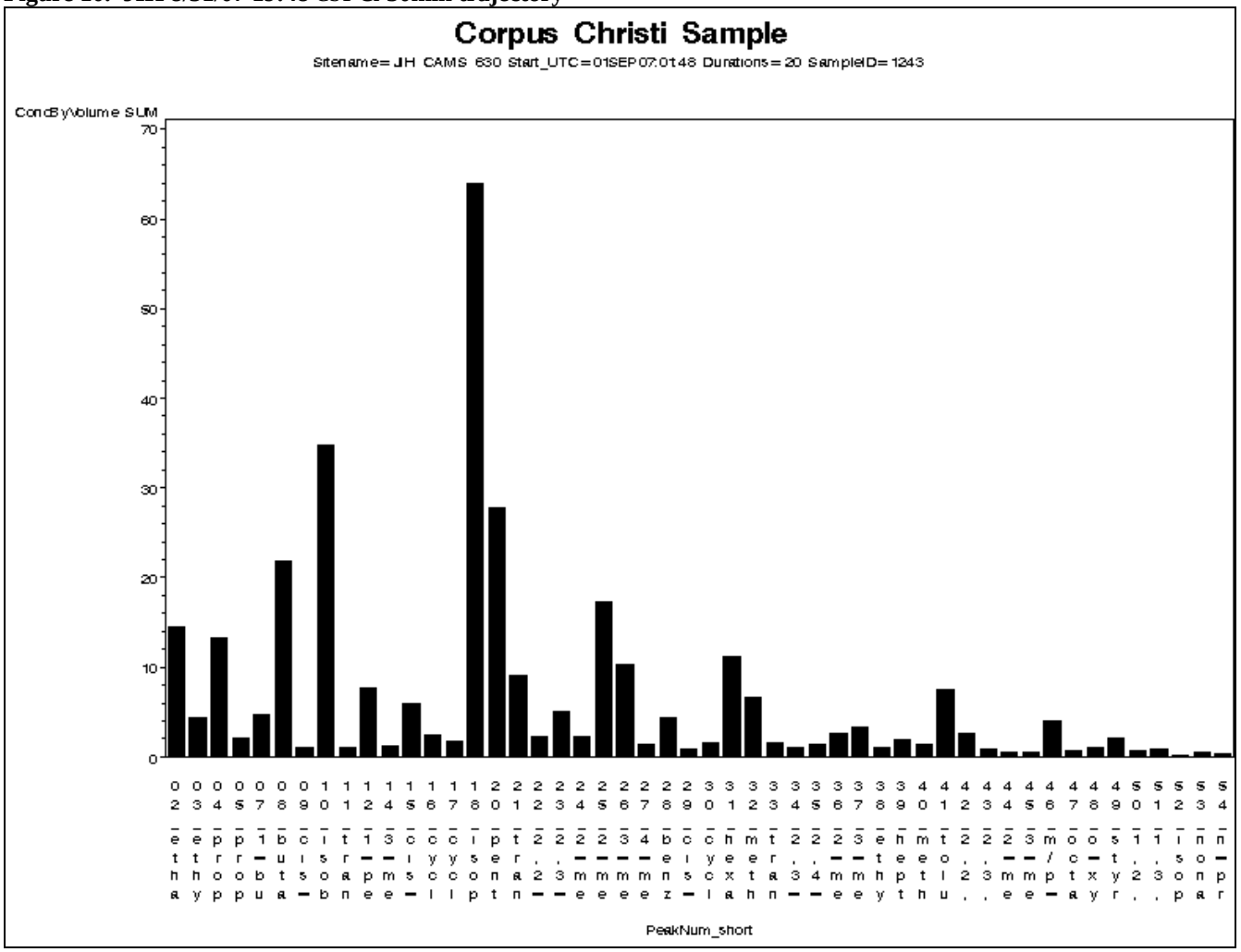
Figure 9. JIH 7/27/07 19:44 CST & 30min trajectory

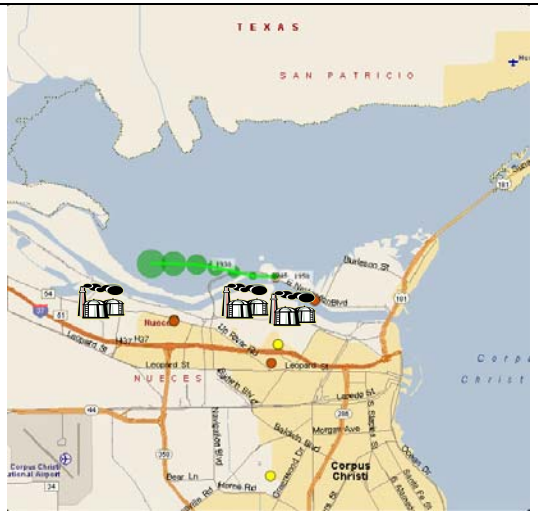


Species

02) ethane 03) ethylene 04) propane
05) propylene 07) 1-butene 08) butane
09) cis-2-butene 10) isobutane 11) trans-2-butene
12) 1-pentene 14) 3-methyl-1-butene
15) cis-2-pentene 16) cyclopentane
17) cyclopentene 18) isopentane 20) pentane
21) trans-2-pentene 22) 2,2-dimethylbutane
23) 2,3-dimethylbutane 24) 2-methyl-1-pentene
25) 2-methylpentane 26) 3-methylpentane
27) 4-methyl-1-pentene 28) benzene
29) cis-2-hexene 30) cyclohexane 31) hexane
32) methylcyclopentane 33) trans-2-hexene
34) 2,3-dimethylpentane 35) 2,4-dimethylpentane
36) 2-methylhexane 37) 3-methylhexane
38) ethylbenzene 39) heptane
40) methylcyclohexane 41) toluene
42) 2,2,4-trimethylpentane 43) 2,3,4-trimethylpentane
44) 2-methylheptane 45) 3-methylheptane
46) m/p-xylene 47) octane 48) o-xylene
49) styrene 50) 1,2,4-trimethylbenzene
51) 1,3,5-trimethybenzene 52) isopropylbenzene
53) nonane 54) n-propylbenzene

Figure 10. JIH 8/31/07 19:48 CST & 30min trajectory

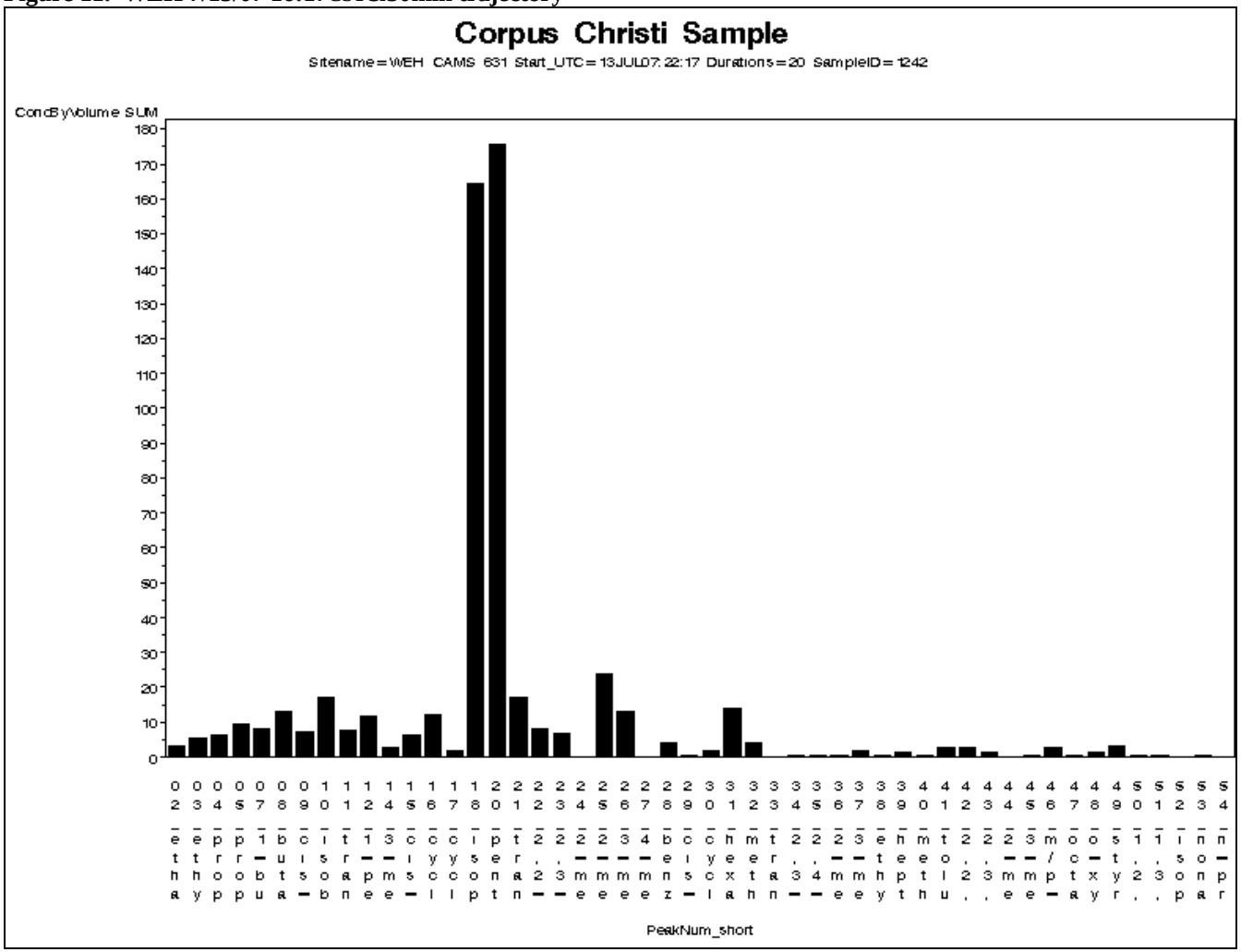




Species

02) ethane 03) ethylene 04) propane
05) propylene 07) 1-butene 08) butane
09) cis-2-butene 10) isobutane 11) trans-2-butene
12) 1-pentene 14) 3-methyl-1-butene
15) cis-2-pentene 16) cyclopentane
17) cyclopentene 18) isopentane 20) pentane
21) trans-2-pentene 22) 2,2-dimethylbutane
23) 2,3-dimethylbutane 24) 2-methyl-1-pentene
25) 2-methylpentane 26) 3-methylpentane
27) 4-methyl-1-pentene 28) benzene
29) cis-2-hexene 30) cyclohexane 31) hexane
32) methylcyclopentane 33) trans-2-hexene
34) 2,3-dimethylpentane 35) 2,4-dimethylpentane
36) 2-methylhexane 37) 3-methylhexane
38) ethylbenzene 39) heptane
40) methylcyclohexane 41) toluene
42) 2,2,4-trimethylpentane 43) 2,3,4-trimethylpentane
44) 2-methylheptane 45) 3-methylheptane
46) m/p-xylene 47) octane 48) o-xylene
49) styrene 50) 1,2,4-trimethylbenzene
51) 1,3,5-trimethybenzene 52) isopropylbenzene
53) nonane 54) n-propylbenzene

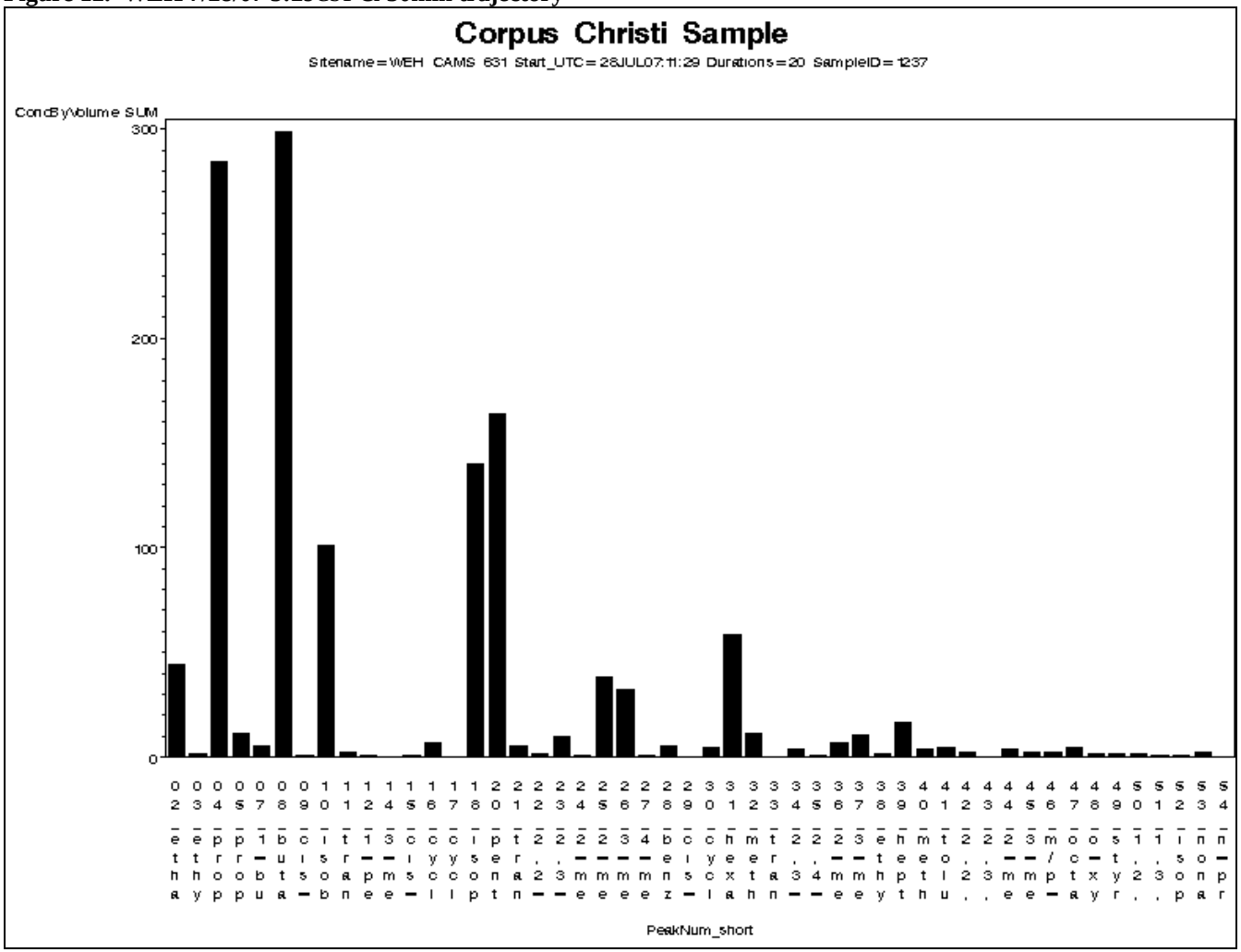
Figure 11. WEH 7/13/07 16:17CST&30min trajectory



Species

02) ethane 03) ethylene 04) propane
05) propylene 07) 1-butene 08) butane
09) cis-2-butene 10) isobutane 11) trans-2-butene
12) 1-pentene 14) 3-methyl-1-butene
15) cis-2-pentene 16) cyclopentane
17) cyclopentene 18) isopentane 20) pentane
21) trans-2-pentene 22) 2,2-dimethylbutane
23) 2,3-dimethylbutane 24) 2-methyl-1-pentene
25) 2-methylpentane 26) 3-methylpentane
27) 4-methyl-1-pentene 28) benzene
29) cis-2-hexene 30) cyclohexane 31) hexane
32) methylcyclopentane 33) trans-2-hexene
34) 2,3-dimethylpentane 35) 2,4-dimethylpentane
36) 2-methylhexane 37) 3-methylhexane
38) ethylbenzene 39) heptane
40) methylcyclohexane 41) toluene
42) 2,2,4-trimethylpentane 43) 2,3,4-trimethylpentane
44) 2-methylheptane 45) 3-methylheptane
46) m/p-xylene 47) octane 48) o-xylene
49) styrene 50) 1,2,4-trimethylbenzene
51) 1,3,5-trimethybenzene 52) isopropylbenzene
53) nonane 54) n-propylbenzene

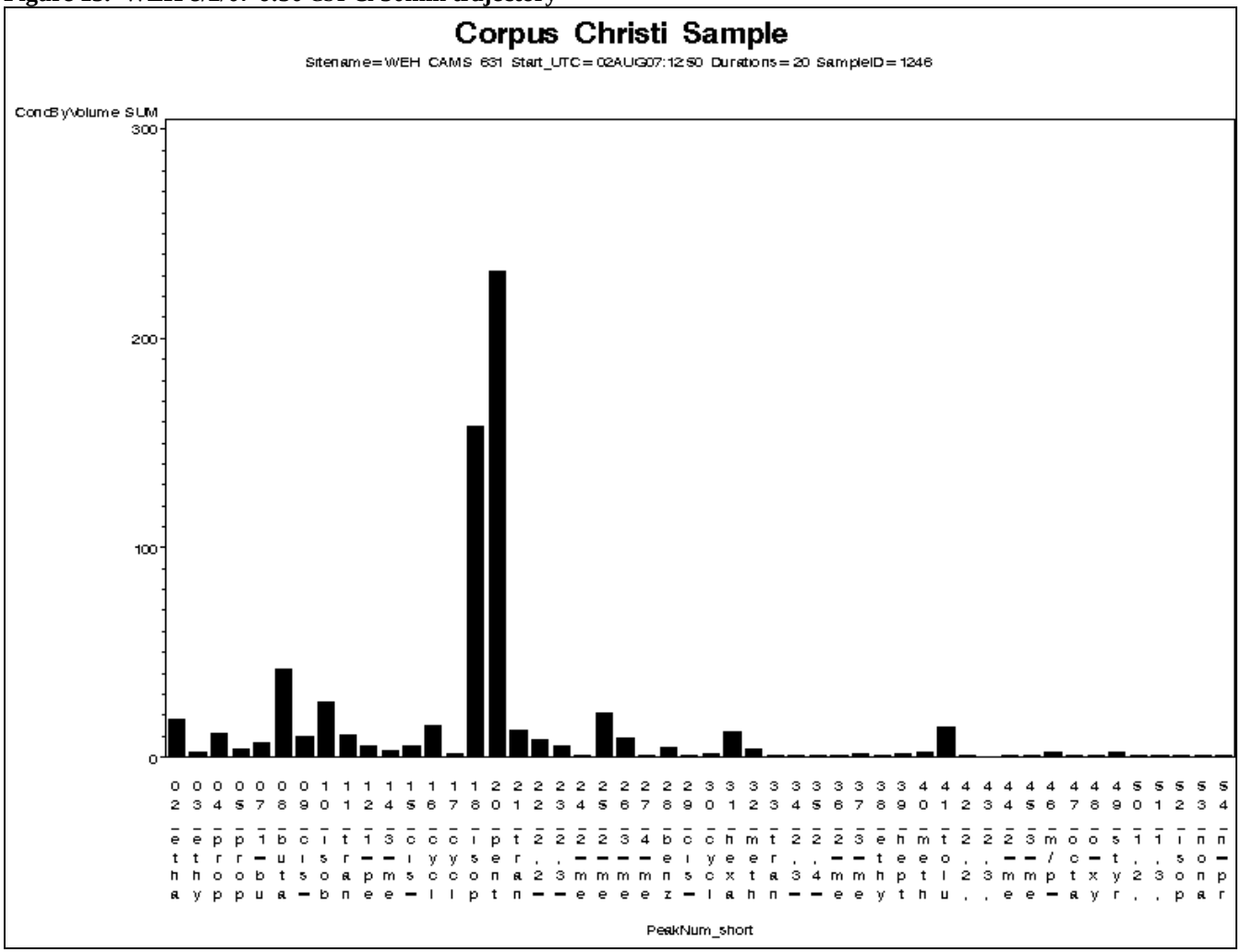
Figure 12. WEH 7/28/07 5:29CST & 30min trajectory



Species

02) ethane 03) ethylene 04) propane
05) propylene 07) 1-butene 08) butane
09) cis-2-butene 10) isobutane 11) trans-2-butene
12) 1-pentene 14) 3-methyl-1-butene
15) cis-2-pentene 16) cyclopentane
17) cyclopentene 18) isopentane 20) pentane
21) trans-2-pentene 22) 2,2-dimethylbutane
23) 2,3-dimethylbutane 24) 2-methyl-1-pentene
25) 2-methylpentane 26) 3-methylpentane
27) 4-methyl-1-pentene 28) benzene
29) cis-2-hexene 30) cyclohexane 31) hexane
32) methylcyclopentane 33) trans-2-hexene
34) 2,3-dimethylpentane 35) 2,4-dimethylpentane
36) 2-methylhexane 37) 3-methylhexane
38) ethylbenzene 39) heptane
40) methylcyclohexane 41) toluene
42) 2,2,4-trimethylpentane 43) 2,3,4-trimethylpentane
44) 2-methylheptane 45) 3-methylheptane
46) m/p-xylene 47) octane 48) o-xylene
49) styrene 50) 1,2,4-trimethylbenzene
51) 1,3,5-trimethybenzene 52) isopropylbenzene
53) nonane 54) n-propylbenzene

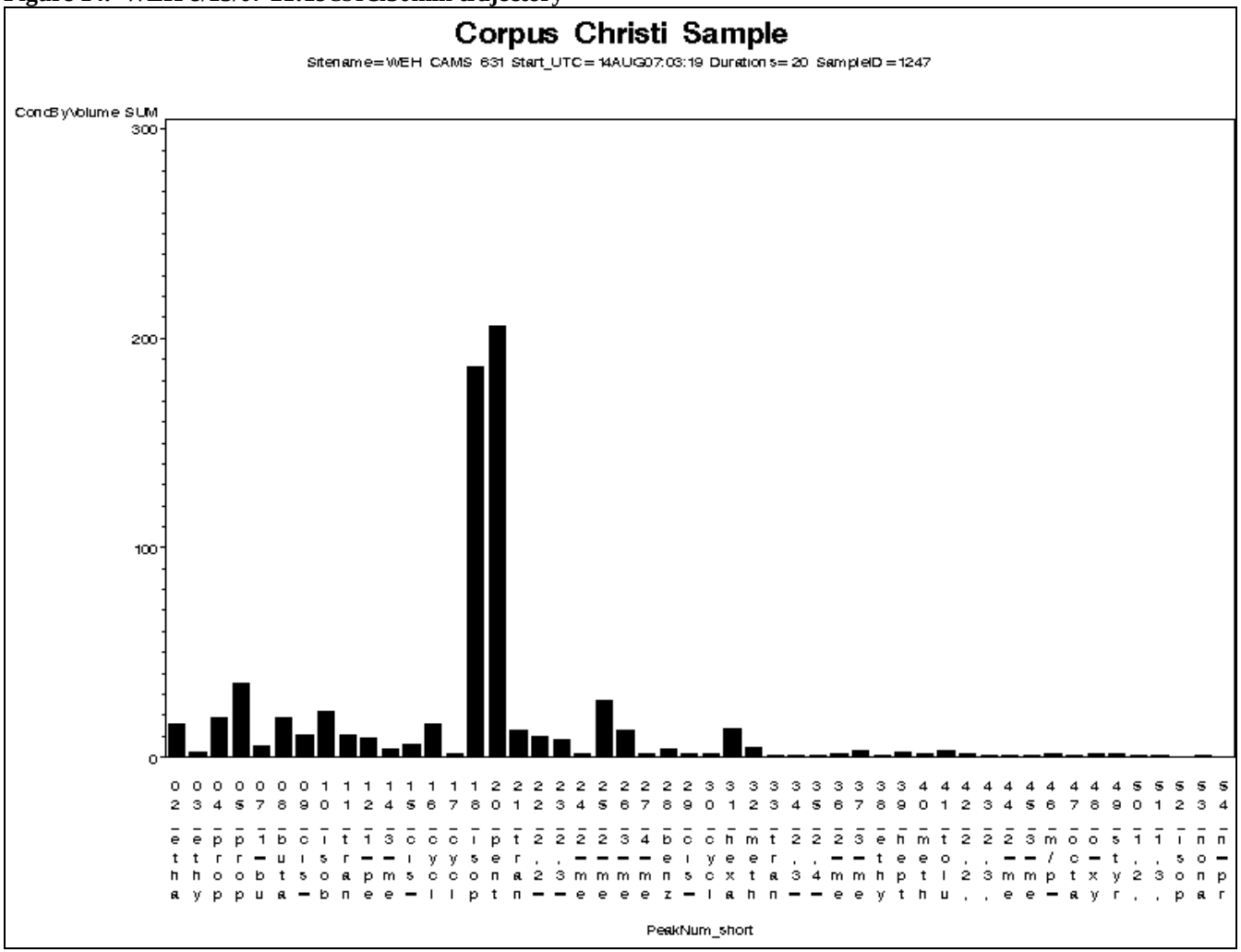
Figure 13. WEH 8/2/07 6:50 CST & 30min trajectory



Species

02) ethane 03) ethylene 04) propane
05) propylene 07) 1-butene 08) butane
09) cis-2-butene 10) isobutane 11) trans-2-butene
12) 1-pentene 14) 3-methyl-1-butene
15) cis-2-pentene 16) cyclopentane
17) cyclopentene 18) isopentane 20) pentane
21) trans-2-pentene 22) 2,2-dimethylbutane
23) 2,3-dimethylbutane 24) 2-methyl-1-pentene
25) 2-methylpentane 26) 3-methylpentane
27) 4-methyl-1-pentene 28) benzene
29) cis-2-hexene 30) cyclohexane 31) hexane
32) methylcyclopentane 33) trans-2-hexene
34) 2,3-dimethylpentane 35) 2,4-dimethylpentane
36) 2-methylhexane 37) 3-methylhexane
38) ethylbenzene 39) heptane
40) methylcyclohexane 41) toluene
42) 2,2,4-trimethylpentane 43) 2,3,4-trimethylpentane
44) 2-methylheptane 45) 3-methylheptane
46) m/p-xylene 47) octane 48) o-xylene
49) styrene 50) 1,2,4-trimethylbenzene
51) 1,3,5-trimethybenzene 52) isopropylbenzene
53) nonane 54) n-propylbenzene

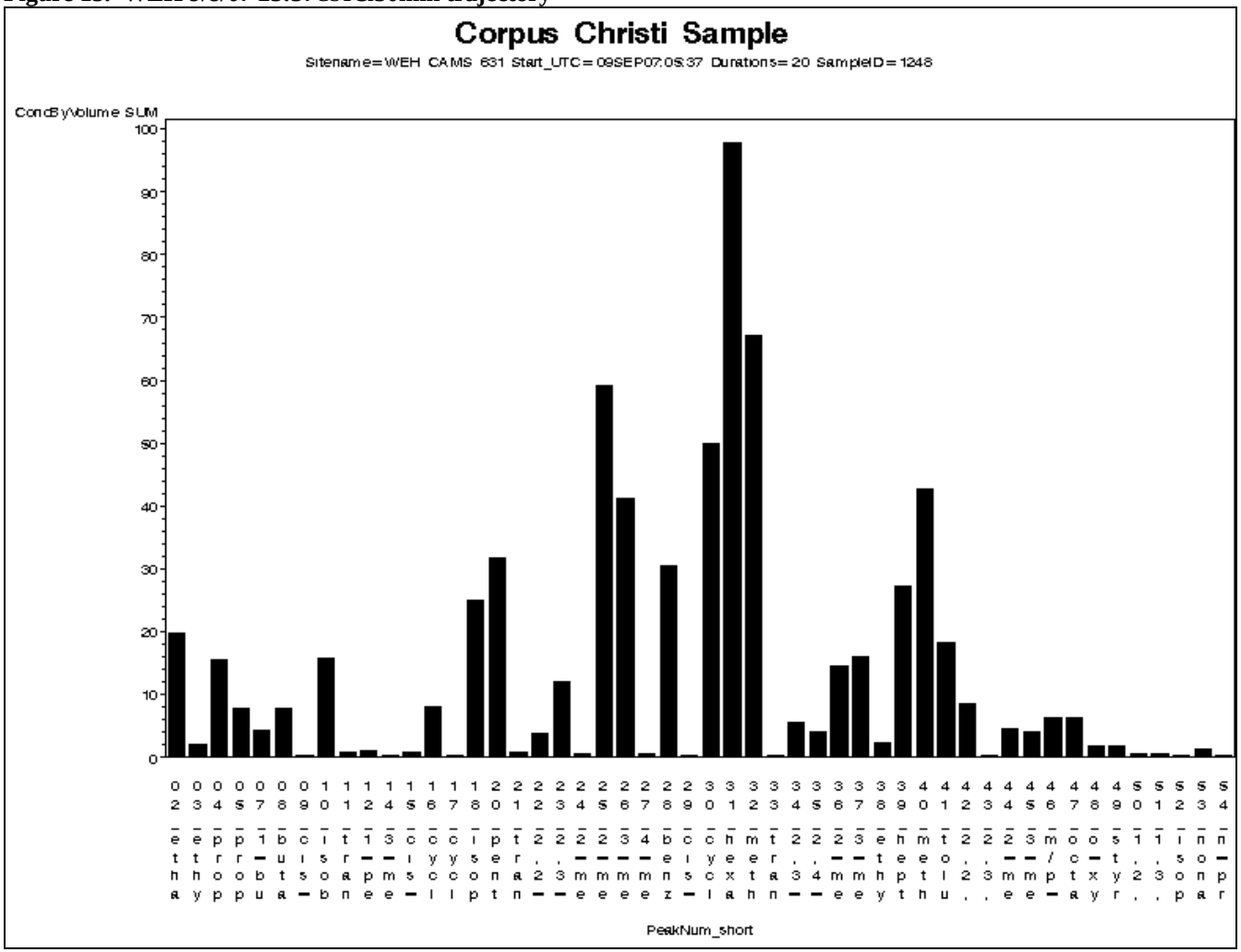
Figure 14. WEH 8/13/07 21:19CST&30min trajectory



Species

02) ethane 03) ethylene 04) propane
05) propylene 07) 1-butene 08) butane
09) cis-2-butene 10) isobutane 11) trans-2-butene
12) 1-pentene 14) 3-methyl-1-butene
15) cis-2-pentene 16) cyclopentane
17) cyclopentene 18) isopentane 20) pentane
21) trans-2-pentene 22) 2,2-dimethylbutane
23) 2,3-dimethylbutane 24) 2-methyl-1-pentene
25) 2-methylpentane 26) 3-methylpentane
27) 4-methyl-1-pentene 28) benzene
29) cis-2-hexene 30) cyclohexane 31) hexane
32) methylcyclopentane 33) trans-2-hexene
34) 2,3-dimethylpentane 35) 2,4-dimethylpentane
36) 2-methylhexane 37) 3-methylhexane
38) ethylbenzene 39) heptane
40) methylcyclohexane 41) toluene
42) 2,2,4-trimethylpentane 43) 2,3,4-trimethylpentane
44) 2-methylheptane 45) 3-methylheptane
46) m/p-xylene 47) octane 48) o-xylene
49) styrene 50) 1,2,4-trimethylbenzene
51) 1,3,5-trimethybenzene 52) isopropylbenzene
53) nonane 54) n-propylbenzene

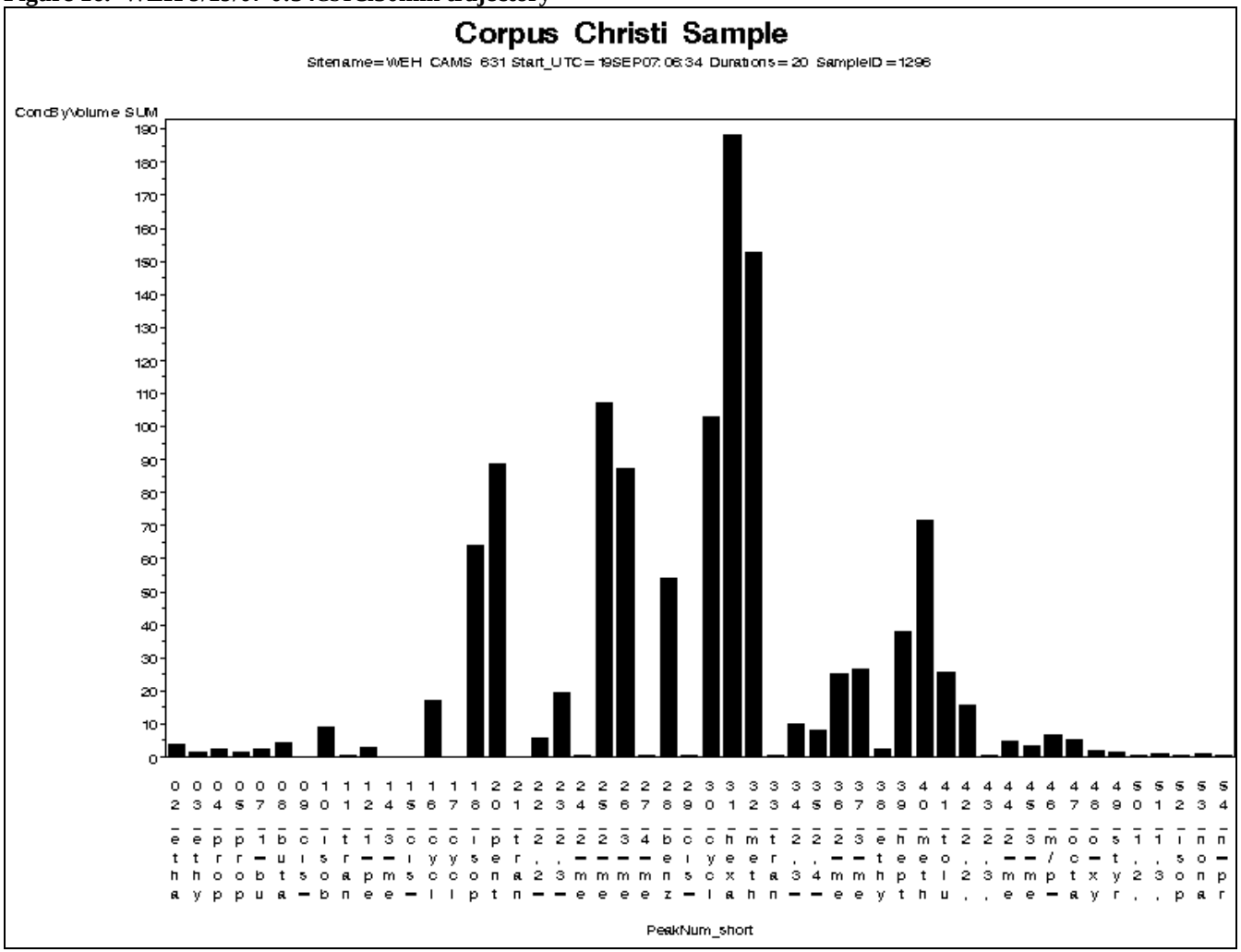
Figure 15. WEH 9/8/07 23:37CST&30min trajectory



Species

02) ethane 03) ethylene 04) propane
05) propylene 07) 1-butene 08) butane
09) cis-2-butene 10) isobutane 11) trans-2-butene
12) 1-pentene 14) 3-methyl-1-butene
15) cis-2-pentene 16) cyclopentane
17) cyclopentene 18) isopentane 20) pentane
21) trans-2-pentene 22) 2,2-dimethylbutane
23) 2,3-dimethylbutane 24) 2-methyl-1-pentene
25) 2-methylpentane 26) 3-methylpentane
27) 4-methyl-1-pentene 28) benzene
29) cis-2-hexene 30) cyclohexane 31) hexane
32) methylcyclopentane 33) trans-2-hexene
34) 2,3-dimethylpentane 35) 2,4-dimethylpentane
36) 2-methylhexane 37) 3-methylhexane
38) ethylbenzene 39) heptane
40) methylcyclohexane 41) toluene
42) 2,2,4-trimethylpentane 43) 2,3,4-trimethylpentane
44) 2-methylheptane 45) 3-methylheptane
46) m/p-xylene 47) octane 48) o-xylene
49) styrene 50) 1,2,4-trimethylbenzene
51) 1,3,5-trimethybenzene 52) isopropylbenzene
53) nonane 54) n-propylbenzene

Figure 16. WEH 9/19/07 0:34CST&30min trajectory



Species

02) ethane 03) ethylene 04) propane
05) propylene 07) 1-butene 08) butane
09) cis-2-butene 10) isobutane 11) trans-2-butene
12) 1-pentene 14) 3-methyl-1-butene
15) cis-2-pentene 16) cyclopentane
17) cyclopentene 18) isopentane 20) pentane
21) trans-2-pentene 22) 2,2-dimethylbutane
23) 2,3-dimethylbutane 24) 2-methyl-1-pentene
25) 2-methylpentane 26) 3-methylpentane
27) 4-methyl-1-pentene 28) benzene
29) cis-2-hexene 30) cyclohexane 31) hexane
32) methylcyclopentane 33) trans-2-hexene
34) 2,3-dimethylpentane 35) 2,4-dimethylpentane
36) 2-methylhexane 37) 3-methylhexane
38) ethylbenzene 39) heptane
40) methylcyclohexane 41) toluene
42) 2,2,4-trimethylpentane 43) 2,3,4-trimethylpentane
44) 2-methylheptane 45) 3-methylheptane
46) m/p-xylene 47) octane 48) o-xylene
49) styrene 50) 1,2,4-trimethylbenzene
51) 1,3,5-trimethybenzene 52) isopropylbenzene
53) nonane 54) n-propylbenzene

Figure 4, page 13, (CCG 7/7) and Figure 5, page 14, (CCG 7/30) are very similar in species composition, featuring isopentane and pentane, with back trajectories to the southeast.

Figure 6, page 15, (CCG 8/14) features ethane, propane, butane isomers, and pentane isomers, and may be a sample of natural gas. The coincident methane concentration was 4239 ppbC, nearly twice the background concentration, which supports a natural gas hypothesis.

Figure 7, page 16, (CCG 9/18) features a wide range of compounds and a back-trajectory over a refinery.

Figure 8, page 17, (JIH 7/16) and Figure 10, page 19, (JIH 8/31) are very similar in composition, but not in their respective back trajectories. If all of the time tags for the canister sample and back-trajectory start times are correct, this may imply the source was very close to the monitor and the pollution was not transported to the site.

Figure 11, page 20, (WEH 7/13), Figure 13, page 22, (WEH 8/2), and Figure 14, page 23, (WEH 8/13) are very similar in composition and back-trajectory. These samples feature pentane and isopentane as prominent species.

Figure 15, page 24, (WEH 9/8) and Figure 16, page 25, (WEH 9/19) are very similar in composition and back-trajectory. These two samples featured compounds with 5, 6, and 7 carbons per molecule, and both had benzene concentrations above the short-term ESL.

In coming months, all of the data collected to date will be pooled to try to cluster like samples together and draw more definitive conclusions as the likely sources, which at this point are hypothesized to include natural gas leaks, tank loading emissions, ship loading emissions, and refinery emissions.

2. Auto-GC Data and Effects Screening Level Summary

In this section the results of semi-continuous sampling for hydrocarbons at the two auto-GC sites – Oak Park C634 and Solar Estates C633 – are presented.

The contents of this paragraph are a summary of a TCEQ Web page on Effects Screening Levels (ESLs) accessed at http://www.tceq.state.tx.us/implementation/tox/esl/list_main.html in October, 2007. The TCEQ establishes ESLs to evaluate the potential for effects to occur as a result of exposure to concentrations of constituents in the air. The ESLs are based on data concerning health effects, potential for odors to be a nuisance, effects on vegetation, and corrosive effects, but ESLs are not ambient air standards. If predicted or measured airborne levels of a constituent do not exceed ESL, adverse health or welfare effects are not expected. If ambient levels of constituents in air exceed ESL, it does not necessarily indicate a problem but rather triggers a review in more depth.

Tables 3 through 6, pages 28 through 31, summarize both the third quarter of 2007 and the most recent rolling four-quarter (annual) period for each site. Tables 3 and 4, pages 28 and 29, are now available to TCEQ staff at http://rhone.tceq.state.tx.us/cgi-bin/agc_summary.pl (accessed October 2007). These two tables show the average and maximum one-hour concentrations for

24 hydrocarbons of interest for the quarter. Tables 3 and 4, pages 28 and 29, show how many measurements were made above an ESL. Tables 5 and 6, pages 30 and 31, show the results of averaging the four consecutive quarterly means to create rolling annual averages and maxima. Tables 5 and 6, pages 30 and 31, also list the ESL values. Benzene is the only species for which recent[2] individual hourly values above the short-term ESL have been measured, and all rolling annual averages for all species are below respective long-term ESLs. Note that not all data have been validated and are thus subject to change. All values in the tables are in ppbV units. Several ESLs are odor related.

[2] Benzene one-hour values over 25 ppbV were made on the following dates in 2007 at Oak Park: Jan. 27, July 4 (in the quarter covered by this report), and Oct. 31.

Table 3. Oak Park Auto-GC statistics 3Q2007

AutoGC Summary Statistics for 48_355_0035 -- Oak Park [32]
Date Range: 3rd Quarter 2007 -- July 1, 2007 00:00 CST to October 1, 2007 00:00 CST
Total Samples Possible: 2208
Sorted by: Species description

Species	Param	CAS Number	Num Ambient Samples	Mean	Peak 1-Hour Value	Peak 24-Hour Value	Num Over 1-Hr	Num Over Odor	Over Annual
1-Butene ppb-v	43280	106-98-9	1832	0.08	1.46	0.27	0	0	No
1-Pentene ppb-v	43224	109-67-1	1832	0.06	1.70	0.22	0	0	No
1,2,4-Trimethylbenzene ppb-v	45208	95-63-6	1832	0.10	1.31	0.28	0		No
1,3-Butadiene ppb-v	43218	106-99-0	1832	0.08	1.15	0.23	0		No
Benzene ppb-v	45201	71-43-2	1832	0.41	26.37	2.08	1		No
c-2-Butene ppb-v	43217	590-18-1	1832	0.09	2.78	0.35	0	0	No
c-2-Pentene ppb-v	43227	627-20-3	1832	0.05	0.61	0.16	0	0	No
Cyclohexane ppb-v	43248	110-82-7	1832	0.17	8.04	0.65	0	0	No
Ethane ppb-v	43202	74-84-0	1832	5.51	93.45	14.22	0		
Ethyl Benzene ppb-v	45203	100-41-4	1832	0.06	1.37	0.20	0	0	No
Ethylene ppb-v	43203	74-85-1	1832	0.84	46.33	3.52	0		
Isobutane ppb-v	43214	75-28-5	1832	1.78	300.95	20.44	0	0	No
Isopentane ppb-v	43221	78-78-4	1831	3.01	139.92	16.47	0		No
Isopropyl Benzene - Cumene ppb-v	45210	98-82-8	1832	0.01	2.04	0.17	0	0	No
n-Butane ppb-v	43212	106-97-8	1832	2.12	206.40	14.59	0		No
n-Hexane ppb-v	43231	110-54-3	1832	0.50	36.10	2.47	0		No
n-Pentane ppb-v	43220	109-66-0	1832	2.07	340.30	19.17	0		No
o-Xylene ppb-v	45204	95-47-6	1832	0.07	1.33	0.22	0	0	No
p-Xylene + m-Xylene ppb-v	45109		1832	0.19	4.31	0.62	0	0	No
Propane ppb-v	43204	74-98-6	1832	3.72	129.23	12.04	0		No
Propylene ppb-v	43205	115-07-1	1832	0.52	76.97	4.38	0		
t-2-Butene ppb-v	43216	624-64-6	1832	0.09	2.11	0.36	0	0	No
t-2-Pentene ppb-v	43226	646-04-8	1832	0.11	1.41	0.34	0	0	No
Toluene ppb-v	45202	108-88-3	1832	0.68	66.44	4.36	0		No

Only data with a sample date/time that is greater than or equal to the starting date/time and less than the ending date/time is included in the report.
The starting time is set to midnight of the first day and the ending time is set to midnight of the last day.

"Total Samples Possible" is calculated from the total number of hours between the starting date/time and the ending date/time and may not represent the actual time the instrument was operational.

The "Num Ambient Samples" column includes all ambient samples, including those not flagged as validated.

The "Mean" is calculated as a weighted average of daily averages and takes into account the number of samples flagged ambient for each day.

The "Over Annual" column is an indication of whether or not the calculated mean is over the established annual effect screening level and may not correspond to an actual annual exceedance.

Table 4. Solar Estates Auto-GC statistics 3Q2007

AutoGC Summary Statistics for 48_355_0041 -- Solar Estates [33]
Date Range: 3rd Quarter 2007 -- July 1, 2007 00:00 CST to October 1, 2007 00:00 CST
Total Samples Possible: 2208
Sorted by: Species description

Species	Param	CAS Number	Num Ambient Samples	Mean	Peak 1-Hour Value	Peak 24-Hour Value	Num Over 1-Hr	Num Over Odor	Over Annual
1-Butene ppb-v	43280	106-98-9	1881	0.04	4.63	0.36	0	0	No
1-Pentene ppb-v	43224	109-67-1	1881	0.03	1.75	0.15	0	0	No
1,2,4-Trimethylbenzene ppb-v	45208	95-63-6	1667	0.08	3.73	0.97	0		No
1,3-Butadiene ppb-v	43218	106-99-0	1881	0.08	25.28	1.71	0		No
Benzene ppb-v	45201	71-43-2	1667	0.25	7.41	1.07	0		No
c-2-Butene ppb-v	43217	590-18-1	1881	0.05	7.10	0.63	0	0	No
c-2-Pentene ppb-v	43227	627-20-3	1881	0.02	1.35	0.14	0	0	No
Cyclohexane ppb-v	43248	110-82-7	1667	0.23	12.69	0.79	0	0	No
Ethane ppb-v	43202	74-84-0	1881	6.51	132.94	20.23	0		
Ethyl Benzene ppb-v	45203	100-41-4	1667	0.04	0.89	0.15	0	0	No
Ethylene ppb-v	43203	74-85-1	1881	0.42	6.52	1.16	0		
Isobutane ppb-v	43214	75-28-5	1881	1.55	32.11	4.26	0	0	No
Isopentane ppb-v	43221	78-78-4	1881	1.67	61.20	5.60	0		No
Isopropyl Benzene - Cumene ppb-v	45210	98-82-8	1667	0.02	1.85	0.10	0	0	No
n-Butane ppb-v	43212	106-97-8	1881	1.83	36.92	4.75	0		No
n-Hexane ppb-v	43231	110-54-3	1667	0.36	47.34	2.59	0		No
n-Pentane ppb-v	43220	109-66-0	1881	1.04	100.90	6.33	0		No
o-Xylene ppb-v	45204	95-47-6	1667	0.06	2.82	0.29	0	0	No
p-Xylene + m-Xylene ppb-v	45109		1667	0.18	2.82	0.78	0	0	No
Propane ppb-v	43204	74-98-6	1881	3.98	92.96	12.29	0		No
Propylene ppb-v	43205	115-07-1	1881	0.57	51.49	35.42	0		
t-2-Butene ppb-v	43216	624-64-6	1881	0.05	2.66	0.44	0	0	No
t-2-Pentene ppb-v	43226	646-04-8	1881	0.05	2.81	0.28	0	0	No
Toluene ppb-v	45202	108-88-3	1666	0.34	8.03	1.12	0		No

Only data with a sample date/time that is greater than or equal to the starting date/time and less than the ending date/time is included in the report.
The starting time is set to midnight of the first day and the ending time is set to midnight of the last day.

"Total Samples Possible" is calculated from the total number of hours between the starting date/time and the ending date/time and may not represent the actual time the instrument was operational.

The "Num Ambient Samples" column includes all ambient samples, including those not flagged as validated.

The "Mean" is calculated as a weighted average of daily averages and takes into account the number of samples flagged ambient for each day.

The "Over Annual" column is an indication of whether or not the calculated mean is over the established annual effect screening level and may not correspond to an actual annual exceedance.

Table 5. Oak Park Annual Averages and Maxima

Oak Park - CAMS 634 - Rolling 12 Month Summaries

	TCEQ ESL Annual	*Mean 12 Month Values (ppb-V) for Qtr Ending:						
Chemical	**ppb-V**	**3/31/2006**	**6/30/2006**	**9/30/2006**	**12/31/2006**	**3/31/2007**	**6/30/2007**	**9/30/2007**
Ethane	1000	8.24	8.36	8.46	7.72	8.12	8.35	8.51
Ethylene	105	1.01	1.04	1.02	0.95	0.95	0.95	0.99
Propane	1000	6.73	6.77	6.85	5.95	6.18	6.23	6.10
Propylene	---	0.95	0.99	1.09	0.99	0.95	0.92	0.83
n_Butane	800	3.7	3.69	3.7	3.42	3.51	3.59	3.62
Isobutane	203	2.68	2.74	2.74	2.53	2.49	2.49	2.54
_13_Butadiene	5	0.04	0.04	0.05	0.05	0.06	0.07	0.08
_1_Butene	7	0.14	0.15	0.16	0.15	0.15	0.15	0.14
c_2_Butene	60	0.12	0.12	0.13	0.13	0.13	0.13	0.13
t_2_Butene	60	0.16	0.17	0.18	0.20	0.21	0.21	0.20
n_Pentane	120	1.91	1.89	1.84	1.56	1.71	1.77	1.98
Isopentane	120	2.94	2.87	2.83	2.48	2.61	2.71	2.98
_1_Pentene	3	0.05	0.05	0.05	0.06	0.06	0.06	0.07
c_2_Pentene	3	0.04	0.05	0.05	0.05	0.06	0.06	0.06
t_2_Pentene	3	0.09	0.09	0.1	0.10	0.11	0.12	0.12
Benzene	1	0.66	0.69	0.74	0.70	0.75	0.75	0.73
Cyclohexane	42	0.26	0.27	0.27	0.23	0.22	0.22	0.22
n_Hexane	50	0.62	0.62	0.62	0.58	0.59	0.59	0.60
Toluene	50	0.71	0.73	0.75	0.64	0.74	0.74	0.78
p_Xylene_m_Xylene	48	0.24	0.25	0.26	0.24	0.24	0.23	0.22
o_Xylene	85	0.09	0.1	0.1	0.09	0.09	0.08	0.08
EthylBenzene	46	0.06	0.07	0.07	0.07	0.07	0.07	0.07
Cumene	10	0.03	0.04	0.04	0.03	0.03	0.03	0.03
_124_Trimethylbenzene	25	0.09	0.09	0.09	0.09	0.09	0.08	0.08

	TCEQ ESL One-Hour	*Max 12 Month Values (ppb-V) for Qtr Ending:						
Chemical	**ppb-V**	**3/31/2006**	**6/30/2006**	**9/30/2006**	**12/31/2006**	**3/31/2007**	**6/30/2007**	**9/30/2007**
Ethane	10000	307.15	307.15	307.15	295.48	380.08	380.08	380.08
Ethylene	1049	73.05	73.05	73.05	73.05	61.38	61.38	61.38
Propane	10000	334.97	334.97	253.57	185.28	303.60	303.60	303.6
Propylene	68100	27.07	27.07	118.2	118.21	118.21	118.21	76.97
n_Butane	8000	158.03	158.03	129.15	353.35	353.35	353.35	353.35
Isobutane	2025	226.38	226.38	95.38	95.39	110.33	110.33	300.95
_13_Butadiene	50	7.95	7.95	7.95	8.66	11.16	11.16	11.16
_1_Butene	70	7.98	5.95	7.1	7.09	15.36	15.36	15.36
c_2_Butene	600	7.35	4.53	6.73	6.73	6.73	6.73	4.84
t_2_Butene	600	9.55	5.98	9.25	9.26	9.26	9.26	6.6
n_Pentane	1200	172.44	172.44	172.44	77.14	142.94	142.94	340.3
Isopentane	1200	106.78	106.78	106.78	78.05	170.63	216.75	216.75
_1_Pentene	30	4.3	3.52	3.52	1.60	2.77	2.77	2.77
c_2_Pentene	30	4.02	2.34	2.34	2.17	7.72	7.72	7.72
t_2_Pentene	30	8.04	5.04	5.04	4.76	21.95	21.95	21.95
Benzene	25	48.17	48.17	51.15	51.15	120.16	120.16	120.16
Cyclohexane	420	36.87	36.87	36.87	32.07	22.43	9.29	9.29
n_Hexane	500	35.05	35.05	35.05	47.26	122.55	122.55	122.55
Toluene	500	69.3	69.3	69.3	25.26	58.52	58.52	66.44
p_Xylene_m_Xylene	480	36.74	36.74	36.74	24.57	24.57	8.58	8.58
o_Xylene	850	27.31	27.31	27.31	8.59	8.59	2.76	2.76
EthylBenzene	460	4.28	5.43	5.43	5.42	5.42	2.24	2.24
Cumene	100	19.69	19.69	19.69	2.13	2.88	2.88	2.88
_124_Trimethylbenzene	250	7.3	10.33	10.33	10.33	10.33	8.20	8.2

(Note: values in bordered cells are above the one-hour ESL.)

Table 6. Solar Estates Annual Averages and Maxima

Solar Estates - CAMS 633 - Rolling 12 Month Summaries

Chemical	TCEQ ESL Annual ppb-V	*Mean 12 Month Values (ppb-V) for Qtr Ending: 3/31/2006	6/30/2006	9/30/2006	12/31/2006	3/31/2007	6/30/2007	9/30/2007	12/31/2007
Ethane	1000	9.27	8.7	8.76	8.14	8.31	8.56	8.44	0
Ethylene	105	0.43	0.4	0.42	0.42	0.47	0.52	0.52	0
Propane	1000	6.12	5.65	5.59	5.19	5.23	5.30	5.22	0
Propylene	---	0.3	0.44	0.46	0.30	0.29	0.35	0.42	0
n_Butane	800	3.14	2.89	2.87	2.75	2.78	2.84	2.81	0
Isobutane	203	2.43	2.3	2.29	2.17	1.95	1.93	1.92	0
_13_Butadiene	5	0.08	0.09	0.08	0.09	0.09	0.09	0.08	0
_1_Butene	7	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0
c_2_Butene	60	0.07	0.06	0.07	0.08	0.08	0.08	0.07	0
t_2_Butene	60	0.15	0.14	0.17	0.19	0.17	0.16	0.11	0
n_Pentane	120	1.44	1.19	1.12	1.08	1.07	1.09	1.11	0
Isopentane	120	2.64	2.08	1.9	1.77	1.69	1.74	1.77	0
_1_Pentene	3	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0
c_2_Pentene	3	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0
t_2_Pentene	3	0.04	0.03	0.04	0.05	0.05	0.05	0.06	0
Benzene	1	0.33	0.32	0.33	0.36	0.38	0.39	0.37	0
Cyclohexane	42	0.26	0.24	0.26	0.26	0.27	0.29	0.28	0
n_Hexane	50	0.44	0.42	0.42	0.42	0.43	0.43	0.42	0
Toluene	50	0.39	0.38	0.39	0.38	0.42	0.44	0.43	0
p_Xylene_m_Xylene	48	0.34	0.33	0.32	0.30	0.34	0.35	0.34	0
o_Xylene	85	0.07	0.06	0.06	0.06	0.07	0.07	0.07	0
EthylBenzene	46	0.06	0.05	0.05	0.05	0.05	0.06	0.06	0
Cumene	10	0.01	0.01	0.01	0.01	0.03	0.03	0.03	0
_124_Trimethylbenzene	25	0.07	0.06	0.06	0.06	0.06	0.07	0.07	0

Chemical	TCEQ ESL One-Hour ppb-V	*Max 12 Month Values (ppb-V) for Qtr Ending: 3/31/2006	6/30/2006	9/30/2006	12/31/2006	3/31/2007	6/30/2007	9/30/2007	12/31/2007
Ethane	10000	163.95	163.95	136.2	142.03	170.06	170.06	170.06	0
Ethylene	1049	8.55	8.55	8.55	6.42	9.02	9.02	9.02	0
Propane	10000	163.43	163.43	117	117.02	122.36	122.36	122.36	0
Propylene	68100	39.67	39.67	51.13	51.13	51.13	51.13	51.49	0
n_Butane	8000	153.43	153.43	70.6	60.85	80.81	80.81	80.81	0
Isobutane	2025	71.33	54.35	54.35	54.36	44.58	44.58	44.58	0
_13_Butadiene	50	15.15	24.77	24.77	24.77	24.77	19.89	25.28	0
_1_Butene	70	4.25	4.25	4.25	3.26	3.26	3.26	4.63	0
c_2_Butene	600	12.48	12.48	12.48	12.47	3.15	3.15	7.1	0
t_2_Butene	600	7.2	7.2	7.2	7.20	4.07	4.07	4.07	0
n_Pentane	1200	141.88	141.88	36.58	28.99	28.99	28.99	100.9	0
Isopentane	1200	55.86	55.86	55.86	39.94	37.70	37.70	61.2	0
_1_Pentene	30	0.8	0.8	0.92	1.05	1.11	6.25	6.25	0
c_2_Pentene	30	0.74	0.74	0.98	1.43	1.43	1.43	1.43	0
t_2_Pentene	30	1.82	1.82	1.88	3.22	3.22	3.22	3.22	0
Benzene	25	51.23	51.23	34.43	11.66	11.66	11.66	11.66	0
Cyclohexane	420	9.05	9.05	9.05	9.05	6.33	6.33	12.69	0
n_Hexane	500	101.83	101.83	35.77	21.45	21.45	8.84	47.34	0
Toluene	500	74.81	74.81	33.56	21.76	136.32	136.32	136.32	0
p_Xylene_m_Xylene	480	76.6	76.6	32.69	32.69	27.48	27.48	27.48	0
o_Xylene	850	1.21	2.34	2.91	2.92	20.05	20.05	20.05	0
EthylBenzene	460	1	3.03	3.03	3.02	3.02	2.78	2.78	0
Cumene	100	0.86	0.86	0.92	1.03	88.69	88.69	88.69	0
_124_Trimethylbenzene	250	28.3	28.3	28.3	2.68	2.68	1.29	3.73	0

(Note: values in bordered cells are above the one-hour ESL.)

3. Elevated Hydrogen Sulfide Case Study July 27-28, 2007 JIH

As was reported last quarter, on May 3, 2007, the JIH site measured 30-minute concentrations of hydrogen sulfide (H_2S) that were greater than the State's standard for one source's contribution to downwind concentrations in a residential area. The State has a separate standard for H_2S concentration contributions in nonresidential areas. The former standard is 80 ppb and the latter is 120 ppb, and the peak 30-min. concentration on May 3 was 113 ppb, with a shorter term 5-minute maximum concentration of 461 ppb at 2:05 p.m. CST. The full scale range on the H_2S analyzers in use in this project is 500 ppb. Coincident with the peak short term H_2S concentrations, TNMHC also had a sudden short term spike above 50,000 ppbC. These short term elevated concentrations were measured in the midst of a longer 6-hour period from 10:20 a.m. to 4:20 p.m. CST during which the SO_2 monitor measured below-the-standard but statistically-significantly elevated concentrations. During this period, SO_2 levels varied between 0 and 77 ppb, as the wind shifted from southwest to southeast.

On July 27, 2007, a similar event occurred, with the elevated H_2S and TNMHC persisting over a longer time period. See Figure 17, page 33 and Figure 18, page 34. TNMHC and H_2S concentrations rose coincidentally from near 0 for the five-minute average starting at 19:05 CST to the top of the full scale range for each instrument during the subsequent five minute average. As was noted above, this is 500 ppb for H_2S and 10,000 ppbC for TNMHC. A canister triggered at 19:44 CST. The canister contents and back-trajectory were shown earlier in Figure 9, page 18, but the contents and the back-trajectory are shown again in larger scale in Figures 19 and 20, pages 35 and 36. The relative mix of propane, butane isomers, pentane isomers, and other alkane suggests this may have been gasoline or similar fuel product. H_2S and TNMHC concentrations dropped below levels of concern around 8:40 CST on July 28. Figure 21, page 37, shows an aerial view of the first five-minute time step in the back-trajectory from Figure 20, page 36, showing the estimated centerline of the air parcel path passed over the docking facility and refinery to the south.

Figure 17. Time series of TNMHC and wind direction data at JIH, July 26-29, 2007

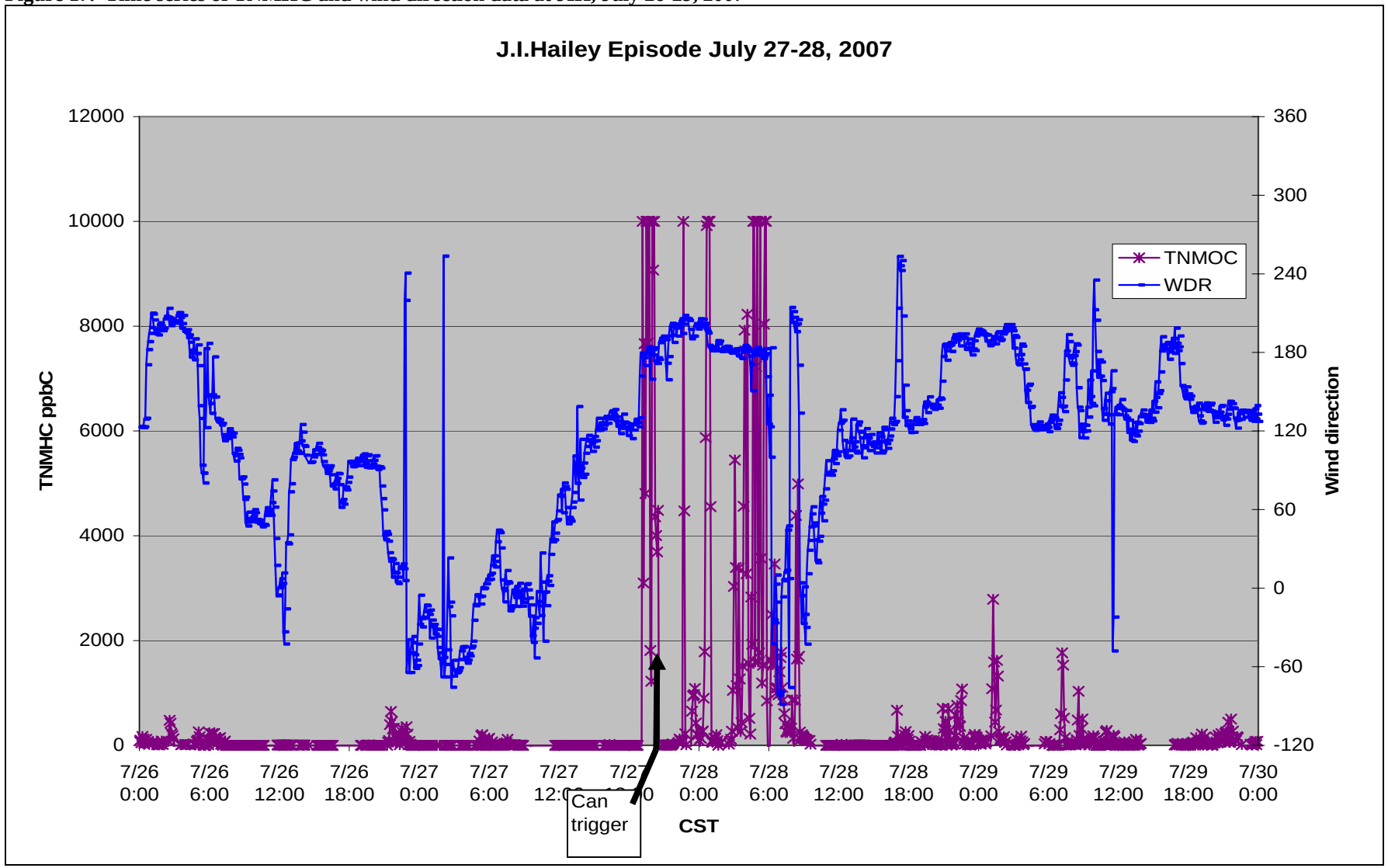


Figure 18. Time series of H_2S, SO_2 and wind direction data at JIH, July 26-29, 2007

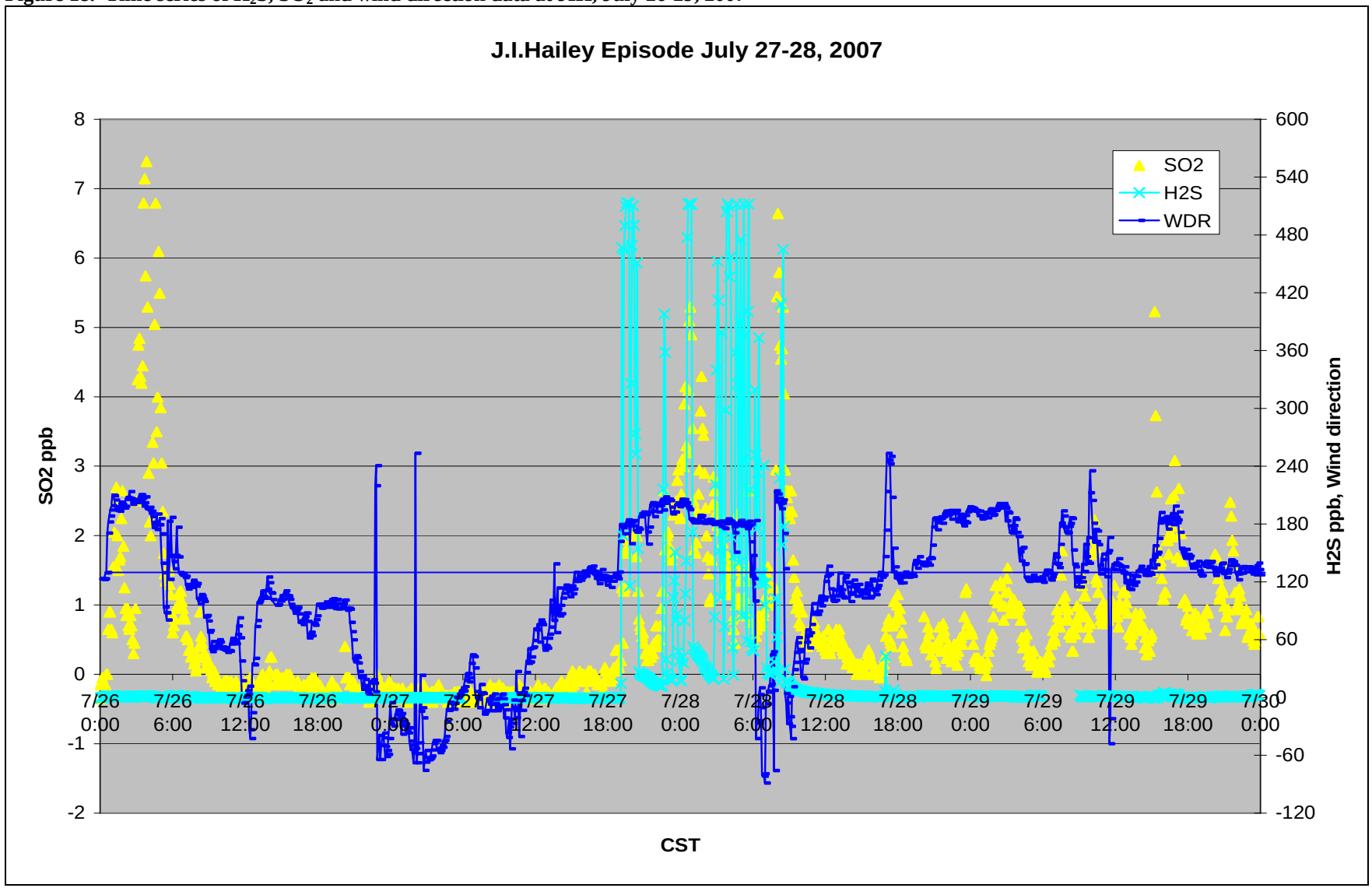
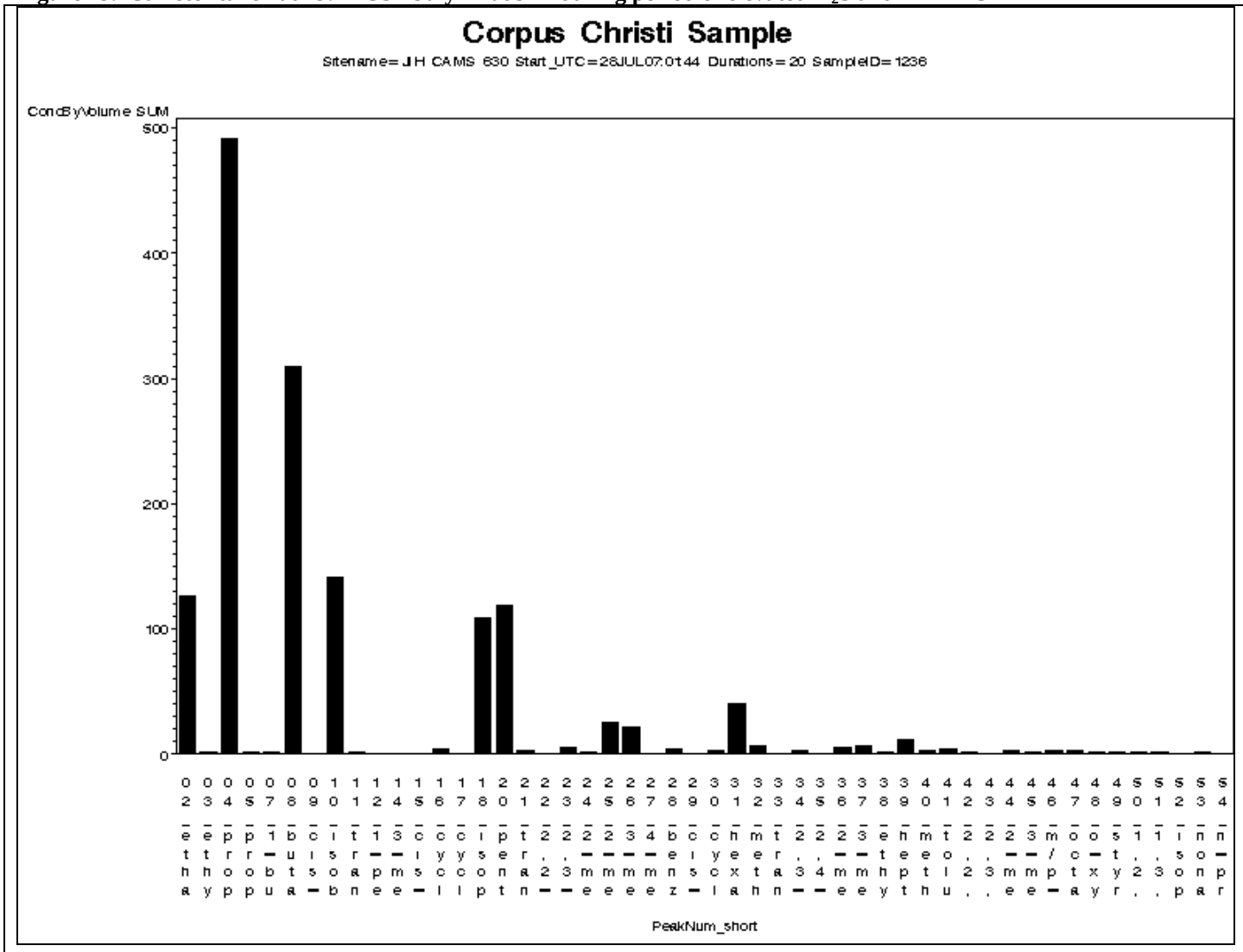


Figure 19. Canister taken at 19:44 CST July 27 at JIH during period of elevated H_2S and TNMHC



Species

02 ethane 03 ethylene
04 propane 05 propylene
07 1-butene 08 butane
09 cis-2-butene
10 isobutane
11 trans-2-butene
12 1-pentene
14 3-methyl-1-butene
15 cis-2-pentene
16 cyclopentane
17 cyclopentene
18 isopentane 20 pentane
21 trans-2-pentene
22 2,2-dimethylbutane
23 2,3-dimethylbutane
24 2-methyl-1-pentene
25 2-methylpentane
26 3-methylpentane
27 4-methyl-1-pentene
28 benzene 29 cis-2-hexene
30 cyclohexane 31 hexane
32 methylcyclopentane
33 trans-2-hexene
34 2,3-dimethylpentane
35 2,4-dimethylpentane
36 2-methylhexane
37 3-methylhexane
38 ethylbenzene
39 heptane
40 methylcyclohexane
41 toluene
42 2,2,4-trimethylpentane
43 2,3,4-trimethylpentane
44 2-methylheptane
45 3-methylheptane
46 m/p-xylene 47 octane
48 o-xylene 49 styrene
50 1,2,4-trimethylbenzene
51 1,3,5-trimethybenzene
52 isopropylbenzene
53 nonane
54 n-propylbenzene

Figure 20 JIH 7/27/07 19:45 CST 30min trajectory

Figure 21 Close-up aerial of first 5-minute time step in Figure 20 back-trajectory from JIH, 7/27, 19:45 CST

APPENDIX B

Financial Report of Expenditures
Financial Report of Interest Earned

Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project

Accounting Report for the Quarter
07/01/07-09/30/07

A. Total Amount of COCP Funds and Other Funds Received Under This Proposal

Total Grant Amount:	$6,761,718.02
Total Interest Earned:	$533,138.93
Total Funds Received:	**$7,294,856.95**

B. Summary of Expenditures Paid by COCP Funds

		Year 3 Budget	Year 4 Adjustments	Adjusted Budget	Prior Activity	Current Activity 07/01/07 - 09/30/07	Encumbrances	Remaining Balance 9/30/2007
Salaries-Prof	**12**	$216,128.63	160,652.00	$376,780.63	($293,794.15)	($43,860.75)	$0.00	$39,125.73
Salaries-CEER	**15**	$19,606.37	15,636.00	$35,242.37	($31,563.34)	($3,545.42)	$0.00	$133.61
Fringe	**14**	$47,984.00	38,783.00	$86,767.00	($65,273.61)	($8,733.86)	$0.00	$12,759.53
Other/C-Analysis	**47/68**	$60,474.00	73,500.00	$133,974.00	($30,310.00)	$0.00	$0.00	$103,664.00
Supplies	**50**	$86,844.00	33,500.00	$120,344.00	($98,636.53)	($13,289.36)	($16,814.29)	-$8,396.18
	51		20,300.00	$20,300.00	($13,140.00)	($90.00)	$0.00	$7,070.00
Subcontract	**62-64**	$1,965,693.00	314,022.00	$2,279,715.00	($2,017,526.26)	($105,986.93)	$0.00	$156,201.81
Travel	**75**	$2,300.00	2,000.00	$4,300.00	($4,542.20)	($135.19)	($0.01)	-$377.40
Equipment	**80**	$0.00	0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Indirect Costs	**90**	$359,855.00	98,759.00	$458,614.00	($354,509.99)	($20,296.81)	$0.00	$83,807.20
TOTALS		**$2,758,885.00**	**757,152.00**	**$3,516,037.00**	**($2,909,296.08)**	**($195,938.32)**	**($16,814.30)**	**$393,988.30**

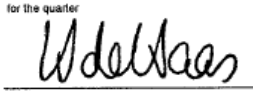
C. Interest Earned by COCP Funds as of 09/30/07

Prior Interest Earned:	$498,752.37
Interest Earned This Quarter:	$34,386.56
Total Interest Earned to Date:	**$533,138.93**

D. Balance of COCP Funds as of 09/30/07

Total Grant Amount:	$6,761,718.02	
Total Interest Earned:	$533,138.93	
Current Q. Expenses	($195,938.32)	
Total Expenditures:	($2,909,296.08)	
Remaining Balance:	**$4,189,622.55**	*includes interest

I certify that the numbers are accurate
and reflect acutal expenditures
for the quarter



Accounting Certification